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Ontario

ROYAL COMMISSION OF INQUIRY INTO CERTAIN
DEATHS AT THE HOSPITAL FOR SICK CHILDREN AND
RELATED MATTERS.

Hearing held
8th floor
180 Dundas Street West
Toronto, Ontario

The Honourable Mr. Justice S.G.M. Grange

P.S.A. Lamek, Q.C.

E.A. Cronk

Thomas Millar

Commissioner

Counsel

Associate Counsel

Administrator

Transcript of evidence
for

October 31, 1983.

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58

Phillips

In Ch. (ETC)

X Roland

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Foster.



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ROYAL COMMISSION OF INQUIRY INTO CERTAIN
DEATHS AT THE HOSPITAL FOR SICK CHILDREN
AND RELATED MATTERS.

Hearing held on the 8th Floor,
180 Dundas Street West, Toronto,
Ontario, on Monday, the 31st
day of October, 1983.

- - - - -

THE HONOURABLE MR. JUSTICE S.G.M. GRANGE - Commissioner
THOMAS MILLAR - Administrator
MURRAY R. ELLIOT - Registrar

- - - - -

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(Cont'd)



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23
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DM/ak

1
2 ---Upon commencing at 10:00 a.m.

3 THE COMMISSIONER: Before you start,
4 Miss Cronk, we have a logistical problem. The week
5 of the 14th of November we are going to have to move
6 from here because the Municipal Board need this,
7 they need it towards the end of the week and I am
8 told that to work out properly we have to take the
9 whole week in the Court House; then we go back to the
10 11th, which is of course a holiday, it is always a
11 holiday for us and it is a holiday for everybody
12 legal. The result of that is that it will be
13 difficult to move our stuff to the Court House on
14 the 11th.

15 The suggestion is made that we move
16 on Thursday afternoon. The other suggestion was
17 made that we take the afternoon off, which needless
18 to say I rejected in a fit of rage. What we could do
19 on that afternoon, if we could have all these argu-
20 ments that we have been saving up for on Thursday
21 afternoon, that is the 10th of November, and if
22 anybody wants to consult and see if that is possible.
23 Failing that what we will do is we will have people
24 move us out and we will just continue but keeping
25 only those exhibits that whoever is examining or
cross-examining at the time says he is likely to



1
2 refer to, everything else will be away. So that is
3 some food for thought.

4 Yes, all right, Miss Cronk.

5 MS. CRONK: Thank you, sir.

6 THE COMMISSIONER: I will ask
7 tomorrow whether next Thursday is a satisfactory date,
8 that is not this Thursday but the Thursday after, the
9 following week.

10 Yes, Miss Cronk.

11 MS. CRONK: Our next witness is
12 Dr. Phillips from the Hospital for Sick Children.
13 Dr. Phillips?

14 THE COMMISSIONER: Yes.

15 DR. JAMES PHILLIPS, Sworn

16 DIRECT EXAMINATION BY MS. CRONK:

17 Q. Thank you, Doctor. Doctor,
18 as I understand it you obtained your Medical Degree
19 at McGill University in Montreal in 1956, is that
20 correct?

21 A. That is correct.

22 Q. You then spent a number of
23 years at the Henry Ford Hospital in Detroit, Michigan
24 as first an intern and then as a resident pathologist.
25 Do I have that right?

A. That is correct.



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Q. In 1958 you commenced a two year residency in Pathology at McGill University returning to Montreal, is that correct?

A. That is correct.

Q. And in 1960 you commenced your residency in Pathology at the New England Deaconess Hospital in Boston, and you completed that residency the following year?

A. That is correct.

Q. In 1961 you accepted a position as a junior Staff Pathologist at Bronx Hospital in New York?

A. That is correct.

Q. And in the years 1962 through to 1967 you were a Research Fellow, as I understand it, and an Assistant Professor of Pathology at the Banting Institute here in Toronto, and as well you served as a Pathologist at Toronto General Hospital?

A. That's correct.

Q. Those were busy years for you. In 1967, Doctor, you returned to Montreal, as I understand it, where you stayed for the next two years in the position of a Surgical Pathologist at the Royal Victoria Hospital?



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A. That is correct.

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Q. And then, Doctor, in 1969 you returned to Toronto and accepted the position as Senior Staff Pathologist and as Chief of Surgical Pathology at the Toronto General Hospital?

7

A. That is correct.

8

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Q. And you remained there, Doctor, as I understand it for the next 10 years?

10

A. Yes.

11

12

Q. Then in 1979 you came to the Hosiptal for Sick Children as Pathologist in Chief?

13

A. Yes.

14

15

Q. And you continue to hold that position today?

16

A. That is correct.

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22

Q. Doctor, apart from the history of your various residents and your appointments to various hospitals that we have just outlined, as I understand it you have pursued over the years a great number of academic interests. You have for example been a Professor in the Department of Pathology at the Faculty of Medicine, University of Toronto since 1974?

23

A. That is correct.

24

25

Q. And for the last nine years as



1
2 well you have been a Professor in the School of
3 Graduate Studies at the University of Toronto?

4 A. That's correct.

5 Q. And you are presently Vice-
6 Chairman of the Education Section of the Department
7 of Pathology again at the University of Toronto?

8 A. That is correct.

9 Q. And you are as well a Professor
10 in the Department of Pediatrics at the Faculty of
11 Medicine at the University of Toronto?

12 A. Yes, that is a cross appointment,
13 yes.

14 Q. Thank you, Doctor. Doctor,
15 you are a member of a large number of professional
16 organizations, both at the local, provincial,
17 national and international level. Perhaps the best
18 way to deal with that is if I could show you a copy
19 of your curriculum vitae which has been provided to
20 me and if you would take a moment and look at it
21 and tell me if it is your curriculum vitae?

22 A. Yes, it is.

23 MS. CRONK: Thank you. Could that
24 be the next exhibit?

25 THE COMMISSIONER: That will be
Exhibit 229.



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2
3 ---EXHIBIT NO. 229: Curriculum Vitae re M. James
4 Phillips.

5 MS. CRONK: Q. Doctor, I won't
6 detail with you all of your various memberships and
7 your various authorships of chapters, journals,
8 publications and abstracts, which I note from your
9 curriculum vitae you have either individually authored
10 or co-authored and by my count it is well over 125
11 articles and they are fully set out in your curriculum
12 vitae I take it?

13 A. Yes, that is correct.

14 Q. I do have a note, Doctor, at
15 least when I went through your curriculum vitae, that
16 you have a particular interest and expertise in the
17 study of human and experimental liver diseases and
18 as well cancer diagnosis and research, do I have that
19 correctly?

20 A. That is correct.

21 Q. Doctor, very briefly before we
22 begin, as I understand it as Pathologist in Chief
23 you would be in an ideal position to comment for us
24 on the structure of the Pathology Department about
25 which we have heard a little bit previously in evidence.

We have heard evidence as you are
probably aware over the last several weeks from



1
2 Drs. Mancer, Cutz and Dr. Becker, and I take it in
3 their respected positions they ultimately report to
4 you as Pathologist in Chief at the Hospital?

5 A. Yes, that is correct.

6 Q. Doctor, there are three main
7 areas that I would like to discuss with you this
8 morning and they concern the studies or reviews
9 which have been undertaken as I understand it by the
10 Pathology Department, or in which the Pathology
11 Department or its members participated concerning the
12 events that are of concern to this Commission, all
13 of those studies and reviews having been undertaken
since March 24th, 1981.

14 Dealing with the first, Doctor, as I
15 understand it, and we have heard evidence in this
16 regard, since March 24th, 1981 postmortem digoxin
17 levels have been taken virtually as a matter of
18 routine at the Hospital, continuing to date on all
19 patients who died in the Hospital; does that accord
with your understanding of the situation?

20 A. Yes, that is correct.

21 Q. And in respect to all of those
22 levels, Doctor, I take it that the specimens required
23 to be submitted for digoxin assays would have been
24 obtained at autopsy in your Department?
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A. That is correct.

Q. Doctor, have you prepared a summary of the postmortem blood digoxin data that has been compiled at the Hospital since March 24th, 1981?

A. Yes.

Q. You may have your own copy there, Doctor, but I will show to you a one page document entitled: "Summary of Postmortem Blood Digoxin Data". Is that the summary which you prepared concerning the overall data that has been compiled since that date?

A. Yes, I have made a large number of summaries and repeatedly updating it and this is the latest one.

Q. Thank you.

MS. CRONK: Could that be marked then, Mr. Commissioner, as the next exhibit?

THE COMMISSIONER: Exhibit 230.

---EXHIBIT NO. 230: Summary of Postmortem Blood Digoxin Data, March 24, 1981 - August 31, 1983.

MS. CRONK: Q. Doctor, with respect to the summary data, it indicates that the time period with which the recorded data, or in respect of which



1
2 the recorded data is relevant is the period March
3 24th, 1981 to August 31, 1983.

4 A. Yes, that is correct.

5 Q. And I take it then that the
6 data that is set out in the summary extends to that
7 period and not further than the end of August of
8 this year?

9 A. That is correct.

10 Q. And during that time period,
11 Doctor, reading from your summary, it appears that
12 there were a total of some 796 autopsies conducted
13 at the Hospital during that time frame, is that
14 correct?

15 A. Yes, that figure includes
16 some cases that were sent in from outside, they
17 may not be complete but they were all postmortem
18 tissues, that is correct.

19 Q. So the number of 796 is the
20 number of the total autopsies conducted in the
21 Hospital whether or not the patient died in the
22 Hospital during that time frame?

23 A. That is correct.

24 Q. And of that number, Doctor,
25 I take it that there was some 608 cases where post-
mortem digoxin levels were sought and obtained?



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A. That is correct.

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Q. That leaves us, Doctor, as is noted on your summary, with 188 cases where digoxin levels were not sought, or perhaps simply not obtained, although autopsies had been conducted in the Hospital. Can you explain to us, Doctor, why that is the case?

A. Yes, on this sheet they are noted at the bottom, where there are four stars:

"Not sufficient quantity of blood obtained in 12, abortions (76)..."

These are mostly from other hospitals:

"Medicolegal cases (38)"

And this group I have mentioned "Other" were quite variable. No specimen was obtainable, or there was restricted consent, or tissues or organs of cases referred from other hospitals, things of that type (62).

Q. In total then, Doctor, I take it that those kinds of cases account for the 188 situations where postmortem digoxin levels were not taken?

A. That is correct.

Q. And when you talk about restricted consent I take it you are talking about



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restricted parental consent to autopsy?

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A. That is correct.

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It appears first of the 608 cases there were 477 where the levels which were sought and obtained had a value of less than 1 nanogram per millilitre?

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A. That is correct.

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Q. And then there appeared to be 97 cases where the level was in fact greater than 1 nanogram but less than 4.9 nanograms, do I have that correctly?

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A. Well, less than 5, it's less than 5, it is up to 4.9.

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Q. Then of course the third category represents those cases where the results had greater than 5 nanograms, and on the basis of this summary there were then 34 as at the end of August 31st, this year?

A. That is correct.

Q. Dealing first, Doctor, and I



1
2
3 will come back and deal with each of these categories,
4 but with respect to the category of cases where the
5 levels were less than 5 but greater than 1 nanogram,
6 I take it that of those there were 85 cases out of
7 the 97 where the patients were on digoxin and the
8 levels which were obtained post mortem were considered
9 to be normal?

10 A. Yes, well, levels up to 5
11 after some time period were accepted as being within
12 normal range postmortem blood digoxin samples.

13 Q. And in each of those 85 cases
14 that the involved patient was known to have been on
15 digoxin therapy prior to death?

16 A. That is correct.
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Q. Then I take it, doctor,

that the remaining group of patients of the category of 97; that is, 12 patients, as best as the Hospital is in a position to indicate, were not known to have been on digoxin therapy prior to their death?

A. That is correct.

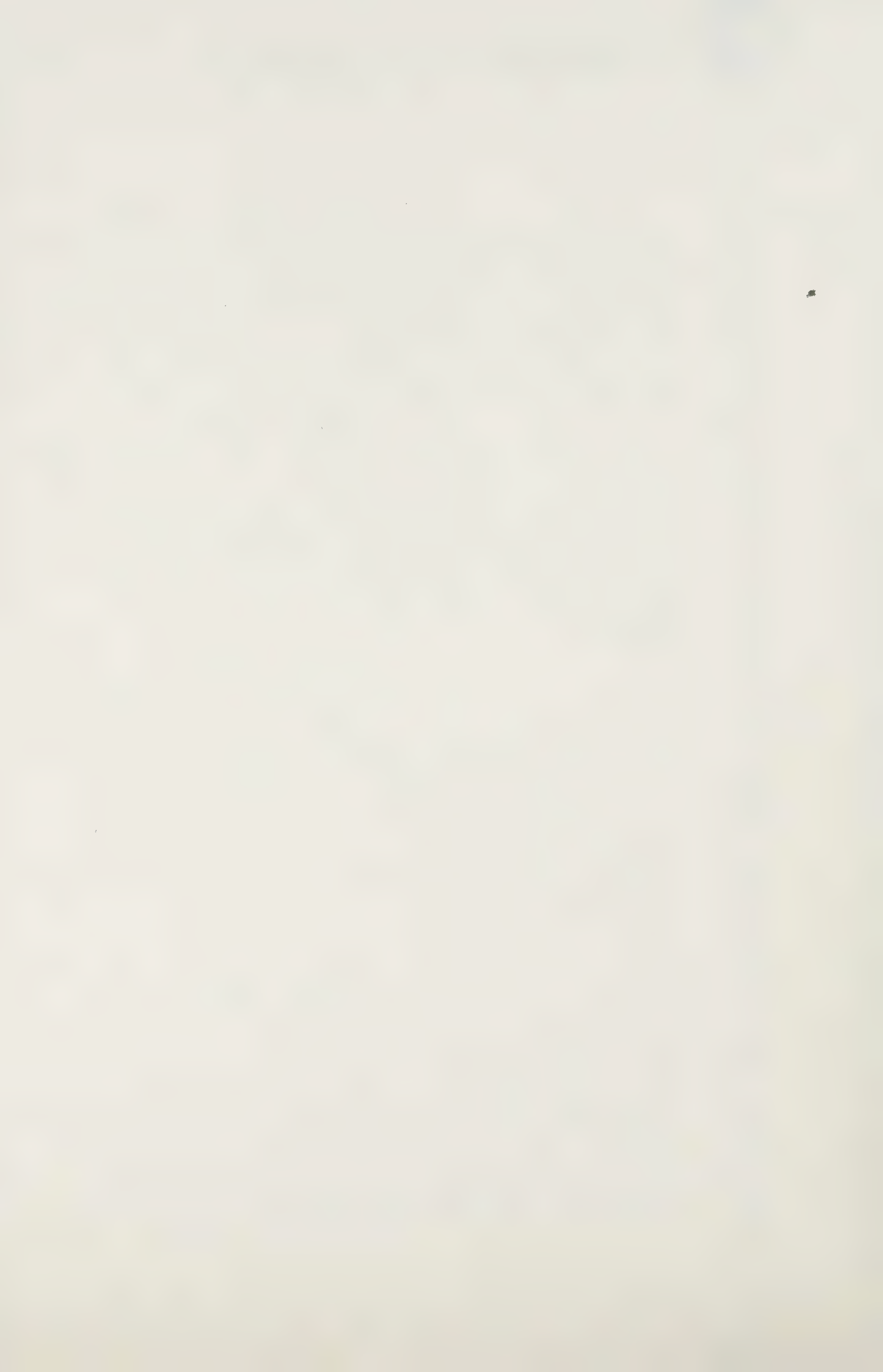
Q. Doctor, do I correctly take that to mean, first, that there was no record of the patient receiving digoxin at The Hospital for Sick Children, if it was a patient who died at your Hospital?

A. That is correct.

Q. And, secondly, I take it that there would be, in those 12 cases, no record in the patient's chart of the patient having received digoxin at the referring hospital if the patient came into The Hospital for Sick Children from another hospital?

A. That is correct.

Q. Doctor, apart from any references or indications that might be contained in the medical records of those 12 patients, was any independent enquiry or any enquiries made to determine whether or not the patient involved had received digoxin at the referring hospital?





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A. Well, what happened in these cases, I referred all of these cases to the Coroner's office, and I know that, on the first group of those, they checked that and I know that, in those cases that were checked, there was no evidence at the other hospital either that digoxin had been given.

This was a verbal discussion I had with Dr. Ross Bennett.

Q. Of the Coroner's office?

A. Of the Coroner's office. That is about the first five on that list.

Q. The first five of the twelve?

A. Actually, they were all referred to the Coroner's office, but I know that he checked - at least he told me that he had checked those. When we initially encountered this situation, it was looked into in great detail.

Q. I take it, doctor, that insofar as you are aware, none of those twelve patients had ever received digoxin prior to death?

A. That is correct.

Q. Doctor, then dealing, if we may, with the first category, those 477 cases where the levels were less than 1 nanogram, you have



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added a postscript, if you will, to your summary and you have indicated that those levels were considered unreliable technically and the results were not considered significant.

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A. Yes.

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Q. And that is because the level was less than 1 and could not be measured with accuracy, I take it, by the assay equipment that was available in the Hospital?

10

A. That is correct.

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Q. Then, doctor, if we may deal then --

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THE COMMISSIONER: When you say they are considered unreliable, they are reliable, I trust, as being less than 1?

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THE WITNESS: They are reliable as being less than 1 but the interpretation of what that means is "considered not significant" in the sense that both -- these are all post mortem bloods and there appears that there are some changes in such samples that create confusion and that values less than 1 are considered, at least at our Hospital now and for some time, as being technically not reliable.

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MS. CRONK: Q. I take it, doctor,



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in respect to all of those cases that, when the level came back from the Biochemistry Laboratory at the Hospital, it was simply recorded as being less than 1 nanogram?

A. In the majority of these it was actually stated -- I have this list which, if you want that information specifically, I would have to refer to it.

Q. I would just like to understand what the numbers were.

A. A lot of them were reported at less than .5 or less than .6.

Q. I see.

A. And others had specific values of .5 or .7 or .2.

Q. And given that the levels were so low and having regard to what was considered in the Hospital to be the minimum level of reliable detection of digoxin on the assay methodology that is used in the Hospital, I take it that it is in that context that those levels were considered unreliable or insignificant?

A. That is correct.

Q. Doctor, could we turn then to the twelve cases where patients known, or at least thought, in the best of the information available to



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you, not to have been on digoxin therapy had readings over 1 nanogram but less than 5 nanograms.

Have you prepared a separate summary indicating the levels that were obtained in each of those twelve cases?

A. Yes, I have.

Q. Doctor, once again, you may have a copy of that with you but, for ease of reference, if I could show you the summary that I have, could you take a moment and look at it and tell me if that is the summary of those twelve cases which you have prepared?

A. Yes, that is correct.

THE COMMISSIONER: Exhibit 231.

--- EXHIBIT NO. 231: Document entitled "P.M. Digoxin Data".

MS. CRONK: Q. Doctor, it would be helpful if we could simply review at the outset the nature of the information that you have sought to record on this summary sheet, and the first column that we see is entitled "Name", and I take it that is intended to indicate the name of the patient but, having regard to the confidentiality that attaches to that, those names, in this case, have been blanked out.



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A. Yes.

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Q. The next column is entitled

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"Autopsy #", and I take it that, in each of the
twelve cases, the number assigned by the Pathology
Department to the involved autopsy is thus recorded
in that column?

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A. That is correct.

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Q. Then, doctor, the next
column of information is an indication of a ward.

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Can you help me, is that the ward
where the patient died or the ward to which the
patient was referred when the patient entered the
Hospital? What information is intended to be
conveyed by that designation?

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A. That is the ward that
appears on the Pathology Autopsy Report form and,
usually, that is the ward of admission to the
Hospital.

18

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Q. That does not necessarily
then reflect the ward upon which the child or the
patient died?

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A. That is correct. I think,
in these instances, it probably is the same, but I do
not know that specifically without looking.

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Q. Thank you, doctor. Reading



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simply across, I take it that the next column indicates The Hospital for Sick Children number, or admission number, assigned to the particular patient?

A. Yes, that is correct.

Q. And then the date of birth of the particular patient?

A. Yes.

Q. The date of the last admission of that patient to the Hospital?

A. Yes.

Q. And the date of death of the particular patient?

A. Correct.

Q. The identity of the referring hospital, where that is applicable?

A. Correct.

Q. And then, finally, the post mortem digoxin level that was ultimately obtained and, where known, the specimen type involved for digoxin assay?

A. Yes.

Q. And then the final category, or column of information is entitled "P.M. Diagnosis", and I take that to be the diagnosis concerning death



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arrived at at the post mortem of the particular patient?

A. Yes. Those are the main features. It is not the full report, but highlights.

Q. We will come back to that in a moment, doctor, but if we examine first the dates of birth of these various patients and compare that with the dates of death column of the various patients, I note - and I think I am correct in this; if I am not, please help me with it - it would appear that in almost all instances, with the exception of two or three of these patients, they were all neonates - less than 30 days of age?

A. Yes, that is correct.

Q. And as you indicated a moment ago, it would appear that most of these patients were either admitted to, or, as you have said, perhaps it as well means that they died on Ward 7G, one of the neonatal wards.

A. That is correct.

Q. If we deal then, doctor, with the actual digoxin levels that were obtained on all of these patients, it would appear that the highest level in all of the twelve cases was 2.1 nanograms.



1
B9 2 A. Yes.
3 Q. And that level, doctor, I
4 take it we can agree is within the range of what would
5 be considered to be therapeutic range for an
6 ante mortem digoxin level?
7 A. Yes.
8 Q. With respect to the various
9 specimen types involved, doctor, we see various
10 short forms, and perhaps they are clearly self-
11 evident but, in the event they are not, if we could
12 briefly review them.
13 For example, dealing with the
14 first case, I take it the specimen was one of venous
15 blood?
16 A. Yes, that is correct.
17 Q. In the second case, there
18 is an indication of blood but not a more specific
19 reference to the site from which the blood specimen
20 was taken.
21 A. That is correct.
22 Q. Then we have "H.bl", does
23 that indicate heart blood?
24 A. Yes.
25 Q. Then we have an "S.S.B.",
doctor. Can you help me with that?



1
B10 2 A. That is sagittal sinus blood.
3 Q. Then, when we come to the
4 last two cases set out on the first page of the
5 summary, we see an indication, and it is either "Ht"
6 or "Hf". Can you help me as to from what site those
7 two samples were taken in the last two cases on the
8 first page?
9 A. In case 110 of '83, the 1.4
10 value is heart and the one below it, 2.1, is also
11 heart.
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Q. Doctor, dealing with the case of Autopsy No. 110/83 we see a level of 1.4 nanograms, and you have told us that that is in respect of the heart specimen, it is a heart blood specimen?

A. It is a heart blood, yes, all right.

Q. And we see as well the handwritten reference to CFS negative. Can you help me as to what that means?

A. Yes, this case, I was able to obtain from the Biochemistry Department who did that test in the Hospital that there was some specimen left and I asked them if they would send it to Mr. Cimbura at the Centre of Forensic Sciences to test it also, which he did, and the report I got back from him was negative.

Q. Doctor, then dealing with the last case, Case No. 12, which is set out on page 2, again, we see an SS, and I take that to mean, in light of what you have said, sagittal sinus blood?

A. That is correct.

Q. Right. Doctor, you have told us earlier that, if I understood you correctly, each of these 12 cases was reported to the coroner?

A. Yes.

Q. And was that done because a



C.2

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postmortem digoxin level was reported at greater
than 1 nanogram?

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A. No, it was done because, as far
as we could tell, these patients had digoxin levels
but were not on digoxin.

5

6

Q. All right.

7

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A. I reported them to the coroner
and also reported them to Dr. Rowe in the Hospital
who is the Chief of Cardiology and also after 1982
onwards to the responsible physician in the Hospital
as well.

9

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12

Q. Doctor, in respect of all of
these 12 cases, can you help us as to whether or not
they were all cardiac patients or do you have that
information?

13

14

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A. No, there is a range of different
diseases here.

16

17

Q. All right.

18

A. Most of them not cardiac.

19

20

Q. Do you have any information
available to you, Doctor, as to the clinical status
of these patients at the time of their death?

21

22

A. Yes. What happened in these
cases when I reported them to the coroner was that
the usual thing that happened was I would have the

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Q. All right.

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autopsy report and the chart with me at the time I would report it and they would ask me various questions about the case and I would read it to them on the telephone and sort of review the case. So, at that time in each of these cases I had some knowledge of the details of the case.

A. The majority of these were critically ill babies who were being transferred here from another hospital because of the extreme state of the infant.

12

13

14

Q. Well, I will come in a moment, Doctor, to the question of postmortem diagnosis that is set out in each case.

15

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A. Yes.

Q. But based on the information that was available to you concerning each patient's clinical condition, can you tell us whether or not any of these 12 patients exhibited symptoms of digoxin toxicity prior to death?

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A. Not to my knowledge they didn't.

Q. All right. Dealing then with the information that is contained in the last column, that is, the postmortem diagnosis, is the information contained in that column drawn effectively, Doctor,



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from the final autopsy report or the results of post-mortem examination report that were prepared on each patient?

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A. That is correct.

6

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Q. All right. And in any of these cases, Doctor, were the deaths of any of the patients considered to have been caused by anything other than natural causes?

9

10

11

12

A. Well, there is one there that - well, they were all natural. The accidental hanging case I think you could just argue about that one but that was an accident.

13

Q. Which case are you referring to now, Doctor?

14

15

A. This is ...

16

Q. Right.

A. Yes, 276 of '82.

(2)

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20

21

Q. Other than that case, Doctor, can you help me in terms of the postmortem diagnosis that I take it was arrived at or concluded in the Pathology Department? Was there any case in which an anatomical cause of death could not be found as a result of the findings evident at autopsy?

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A. No, we had a satisfactory pathological cause of death in every case.



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Q. All right. I take it you have told us, Doctor, that each of these cases were discussed with the coroner at the time that they were reported, with the Coroner's offices?

A. Yes, that is correct.

Q. All right. Was that one particular coroner, Doctor, or were there a number involved?

A. Well, since March of 1981 Dr. Bennett instructed me to refer all my remarks connected to digoxin and heart deaths at the Hospital to one coroner, namely, Dr. Tepperman.

Q. All right.

A. So, the majority of these would have been reported to him in - I'm not sure what date, but for the last six months or perhaps longer than that he asked me to report them to Dr. Young.

Q. All right. So, some of these cases then were reported directly to Dr. Tepperman and others directly to Dr. Young?

A. That is correct.

Q. Both in the Coroner's offices?

A. That is correct.

Q. Doctor, may we turn then to the third category of cases mentioned on your overall



C.6

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2 summary and, that is, that group of cases where
3 digoxin levels of greater than 5 nanograms were
4 recorded on postmortem specimens. In respect of those
5 cases, Doctor, have you as well prepared a summary,
6 or do you have available to you a summary indicating
7 the cases involved?

8 A. Yes, I do.

9 MR. ROLAND: Before my friend gets
10 into that. I apologize to Miss Cronk, I omitted to
11 give her these corrections. Dr. Phillips has
12 provided me this morning just before he was called
13 as a witness some corrections to the next document to
be put in, he has prepared those.

14 MS. CRONK: Thank you.

15 MR. ROLAND: He spent a great deal of
16 the weekend reviewing them, this next document for
errors.

17 MS. CRONK: Well, perhaps we could
18 mark first the summary and then you can take us
19 through the amendments or the corrections, Dr. Phillips.

20 I am showing to you, Doctor, what
21 appears to be a computer printout dated October 20,
22 1982 which records in a written fashion some
23 34 cases and information with respect to 34 cases
24 and then in handwriting information with respect to
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an additional 3 cases. Is this is the computer print-out summary of the cases where postmortem digoxin levels of a greater than 5 nanogram reading were obtained?

A. Yes, it is.

THE COMMISSIONER: Exhibit 231.

MS. CRONK: Exhibit 232, sir?

THE COMMISSIONER: 232, then I have lost something.

MS. CRONK: 231, Mr. Commissioner, was the summary with respect to 12 cases.

THE COMMISSIONER: Oh, yes, yes.

--- EXHIBIT NO. 232: Document entitled "Digoxin Chart: October 20, 1983".

MS. CRONK: Q. Then, Dr. Phillips, perhaps we will go through this together but I am showing you the first of two documents which Mr. Roland has provided to me. It is entitled Postmortem Digoxin Value - Comparison of Two Laboratories. Can you explain to us - first of all, is this a summary that you have prepared?

A. Yes, that is correct.

Q. Can you tell me what information is intended to be conveyed in this summary?

A. Well, I thought this might be of interest to you in connection with many of these cases



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in the greater than 5 category. A number of these samples, like the one I mentioned a few minutes ago, some sample was available to send to the Centre of Forensice Sciences to have the value double-checked and this is a list of those cases.

Q. Does this summary then in those cases where duplicate tests were conducted record both the level that was achieved at The Hospital for Sick Children and as well the level at the Centre of Forensic Sciences?

A. That is correct.

Q. All right. We will come back to this in a moment. Could we have that marked, Mr. Commissioner?

THE COMMISSIONER: Have we another one - I'm sorry, I missed that.

MS. CRONK: That is the comparative results.

THE COMMISSIONER: That will be 233 then I guess.

MS. CRONK: Thank you, Mr. Commissioner.

--- EXHIBIT NO. 233: Postmortem Digoxin Values - Comparison of Two Laboratories.

MS. CRONK: Q. Dr. Phillips, Mr. Roland has provided me as well with what appears to be a memo from yourself to me indicating corrections on



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postmortem digoxin chart as at October 20, 1983. Is this a list of some further corrections or additions that you would like made to the computer printout chart on these 34 cases?

A. Yes, these are further corrections that up until now at least you haven't seen.

THE COMMISSIONER: Make that 232A. Is that a correction to 232?

MS. CRONK: Yes, that is correct, Mr. Commissioner, these are corrections to Exhibit 232.

THE COMMISSIONER: That will be 232A.

EXHIBIT NO. 332A: Corrections to Exhibit No. 232.

MS. CRONK: Q. Doctor, if we could deal first, and I will come back to the corrections or the amendments that you wish to make to the computer printout but if we could deal with the printout first, it is Exhibit 232.

A. Yes.

Q. Dealing with simply the categories of information that are contained on the chart. Once again, the first column appears to be the autopsy number of the concerned patient. Am I interpreting that correctly?

A. Yes. Well, to the far left of



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that is just a numerical listing of the numbers in sequence but then is the autopsy number, that is correct.

5

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Q. And once again at my request, Doctor, the names of the involved patients have been blanked out?

7

8

A. That is correct.

9

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Q. And then we have a column indicating Ward. Can you tell me, once again, is that the ward upon which the particular patient died or is that the ward to which the patient was admitted, or do you know?

13

14

A. Well, to the best of my knowledge this is where the patients died in this case.

15

16

Q. And then we have the date of death of the particular patient and the time of the death where known?

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A. Right.

Q. And then we have a column, Doctor, entitled Last Digoxin Dose, and there is a date column, a time column and an amount column. I take it that where that information was available to you you have recorded the date and the time of the last dose of digoxin administered to the patient together with the particular amount of the dose and the method of administration, be it oral or by IV apparatus?

A. Yes, that is correct.



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Q. And the next column, Doctor, is entitled "Ante-Mortem Digoxin", and once again we see a date and a time, and then the indication nanograms per millilitre. Would we be interpreting the information contained in this column correctly if we took it to mean that the digoxin level, the last digoxin level recorded during life in respect of these particular patients?

A. That is correct.

Q. And is the time and the date indicated in this column, Doctor, the time and date of the level being reported to you, or is it the date upon which the sample was taken?

A. I would have to probably look at the biochemistry report on it, I think this is the time that the sample was taken on the patient, if I remember it specifically.

Q. Then, Doctor, the next column is entitled "Post-Arrest Digoxin", and again there is a date, time and a measurement column for information. Can you tell us what information, where it is contained in the column, is intended to be conveyed in that section of the printout?



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A. Well, this column may not be complete but some of the patients who died on some of the wards had blood taken, I think from the heart, on the ward, by a resident or a physician on the ward before the body was sent, after the baby had died, but before the baby was sent to the hospital morgue.

8

9

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Q. Was - that was done, Doctor, as a result of the post-mortem digoxin assay on that post-arrest sample recorded in this column?

11

A. Yes.

12

13

14

Q. The results in that column there should be distinguished from those which appear in the next column which I take to be the results on post-mortem specimens obtained at autopsy?

15

A. That is correct.

16

17

18

Q. And, Doctor, dealing with the last column we see first a date, do I take that correctly to be the date of the autopsy?

19

A. Yes.

20

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Q. Then we see an indication of hours; just dealing for example with the very first case, case No. 1, we see 23 hours; can you tell me, is that the number of hours after death in which the



3 2 autopsy was commenced, or is that the number of hours
3 after the last dose of digoxin?

4 A. No, that is the number of hours
5 after death that the autopsy was done.

6 Q. Then we see, Doctor, the result
7 of the actual assay that was conducted and the level
8 that was recorded.

9 A. Yes.

10 Q. Those numbers are then set out?

11 A. Yes.

12 Q. And all of those I take it are
13 recorded in nanograms per millilitre?

14 A. Yes, that is correct.

15 Q. And, once again where the speci-
16 men type taken at autopsy was known or was recorded
17 by the Internal Pathology Department there is an
18 identification of the particular sample type set
19 out?

20 A. Yes.

21 Q. Doctor, I will return to the
22 specific information in a moment; but I take it
23 there are first three additions that have been made
24 to this printout since the date of its original
25 preparation, and they are set out on Page 2 of the
printout, and they appear to be the addition of a



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2 further 3 cases; cases 35 through 37 with like
3 information that we have just described set out in
4 respect of each of those cases. I take it, Doctor,
5 in those three additional cases levels of greater
6 than 5 nanograms were obtained on post-mortem
7 samples taken for digoxin assay.

8 A. Yes, at least on one sample.

9 Q. Now, Doctor, apart from --
10 well, perhaps you can tell us first, there are
11 then 37 cases in total, three more than there were
12 at the end of August when you prepared your overall
13 summary list that we looked at a few moments ago.
14 What time period does that encompass?

15 A. This brings us right up to the
16 20th of October, 1983.

17 Q. Is this then to be taken as a
18 list of all cases in the hospital where levels of
19 greater than 5 nanograms had been recorded on
20 patients since March 24th, 1981 through to
21 October 20th?

22 A. That is correct, 1983.

23 Q. Doctor, again, and I will come
24 back to the exhibits that we marked a few moments
25 ago. At my request have you undertaken a review of
the information contained in the column entitled,



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" Last Digoxin Dose"?

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A. Yes.

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THE COMMISSIONER: Before you do that,
this PO you say stands for orally administered?

THE WITNESS: Yes.

THE COMMISSIONER: PO, what does that
mean?

THE WITNESS: It means per os.

THE COMMISSIONER: Per os?

THE WITNESS: Through the mouth,
orally.

THE COMMISSIONER: What does NG stand
for?

THE WITNESS: That was nasal gastric tube.

THE COMMISSIONER: That is the same
thing, I take it, that would be orally, it would go



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1

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down through the ---

3

THE WITNESS: Yes, nasal gastric
tube is a tube placed ---

4

5

THE COMMISSIONER: Usually through the
nose?

6

7

THE WITNESS: Usually through the
nose into the stomach.

8

9

THE COMMISSIONER: Yes, all right,
thank you. I am sorry.

10

11

MS. CRONK: No, that is fine, Mr.
Commissioner.

12

13

14

15

Q. Could you then, Doctor, briefly
outline for us the amendments or the additional
information which we should record and perhaps we
can simply do this manually as you go through it,
the column entitled "Last Digoxin Dose"?

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A. Yes. The first one is Case 9,
that is 81-156; digoxin was given outside of the
hospital in this case and in scrutinizing the chart
I found 81-6-08 is not correct, it is actually
-07. at 2300 hours, and it is a dose of .04 milli-
grams per kilo.

21

22

THE COMMISSIONER: It is a dose of
what, did you say?

23

24

25

THE WITNESS: The date is the 7th,



not the 8th.

THE COMMISSIONER: Yes, and the time?

THE WITNESS: The time is 2300,
11:00 at night.

THE COMMISSIONER: Yes.

THE WITNESS: And the amount was
.04 milligrams per kilo and actually only half of
the dose was given, that apparently was a digitalizing
dose for this baby and it got about half of that
amount. That was given in Sault Ste. Marie before
the patient was put on the plane. The patient was put
on the plane I gather shortly after midnight and in
one place on the chart it said that no digoxin had
been given up to the time of leaving, and it left
actually on the 8th, but when I scrutinized it I think
it was actually given on the 7th at 2300 hours.

Q. Thank you, Doctor. Are there
others that we should amend in any way in that
column?

A. Yes. Number 11, the amount was
0.012 rather than 8; and the next one was number 12,
81-12-02, rather than 1, and it is 1,000, not
2200.

Q. The date of the last dose, then,
was the 12th of February, and the time of the last



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dose was, I'm sorry, what did you say?

3

A. You are doing number 12, right?

4

Q. Yes, I am sorry.

5

A. 81-12-02 instead of 01.

6

Q. Yes.

7

A. And the time was 1000, instead
of 2200.

8

Q. Are there any other changes,

9

Doctor?

10

A. Yes, Number 13.

11

Q. Yes.

12

A. This one, the date was the 16th,
not the 12th, and the time just says A.M.

13

MR. ROLAND: Doctor, it is the 16th,

14

not the 15th.

15

THE WITNESS: Yes, the 16th, not the

16

15th.

17

Q. Yes.

18

A. Instead of 2100 it just says it
was given in the morning.

19

THE COMMISSIONER: I'm sorry, this

20

is the 13th, the date of what?

21

MS. CRONK: The last digoxin dose.

22

THE COMMISSIONER: Yes. Well, I am

23

just, I hate to put these changes on, I wonder if

24

25



9 2 we couldn't, I could mark them up myself.

3 MS. CRONK: I think, sir, when I have
4 a full list of all of these amendments that we can
5 have those typed up and presented in a separate
6 document so if you would prefer not to mark your own
7 copy.

8 THE COMMISSIONER: It is the
9 Commission's copy. I had better not mark it up.
10 How many more changes?

11 MS. CRONK: We have been given some
12 this morning and I know the doctor has several more.

13 THE WITNESS: There is about five or
14 six more all together.

15 THE COMMISSIONER: I am just wonder-
16 ing if we couldn't have this done again.

17 MS. CRONK: Perhaps I can explore that
18 with the doctor at the break and for present purposes,
19 so we can proceed with the balance of the doctor's
20 evidence, if we could simply record what the changes
21 are on the record.

22 THE COMMISSIONER: Yes, all right.
23 Are there any changes in the readings?

24 THE WITNESS: No, there is no change
25 in the readings.

THE COMMISSIONER: All right.



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Q. Doctor, could you very quickly

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then, if you would, and we will have these

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separately prepared on a separate document for

5

counsel and for the Commissioner, tell us what the

6

balance of the changes are in the last digoxin dose

7

column; you were dealing last with case No. 13.

D-2

8

A. Yes, the next one is No. 15;

9

this was an outside, I couldn't find the dose but

10

the last dosage was given on the 17th of April,

1982 at the North York General Hospital.

11

Q. And the next change, Doctor?

12

A. Then No. 16, 2100 should be

0900 and that was oral.

13

Q. And the next change, Doctor?

14

A. The number 18, so instead of---

15

THE COMMISSIONER: Before you leave

16

that one you say that should be ---

17

THE WITNESS: PO.

18

THE COMMISSIONER: We are looking

19

at 16, is it that should be?

20

THE WITNESS: Yes.

21

Q. Time at 9 A.M., given orally.

22

A. Condition of baby written on

23

chart, they are usually 0900 or 9:00 in the morning

24

or 9:00 at night, or 2100, but you have to look at

25



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the double initials, and when you scrutinize it to see which role it is in it turns out it is more accurately designated 0900 in this case.

5

Q. I'm sorry, you were then referring to Case No. 18.

6

7

8

9

A. No. 18 was, the date was the 4th, not the 3rd and the hours were at 0700 and the dose was .0075 orally, that is at the Toronto East General Hospital.

10

11

Q. Are there any other changes, Doctor?

12

13

14

A. Yes, there is a typing mistake, I think, in No. 23; it is .066, rather than .660 in the amount column. No. 24 is 9:00, not 8:00.

15

16

Q. Anything on Page 2?

A. 28, it is 1000, not 2000; 36 it is 530.

17

18

Q. Is that case No. 36?

A. Yes.

19

20

21

22

MR. ROLAND: Actually, we provided Ms. Cronk on Thursday with these additional cases and she has renumbered them, she has renumbered our 35 her 36 and vice-versa, so when the doctor is talking about 36 he is really talking about 35.

23

24

25

Q. Can you just give us the autopsy



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number on that case, Doctor?

3

A. 83-225.

4

Q. The time of the last dose

5

was 5:30?

6

A. Yes.

7

Q. Not 9:00?

8

A. That is correct.

9

Q. And then are there any other
changes in that column, Doctor, or is that it?

10

A. Well, there is a further addition-
al number 37.

11

12

Q. And what is that?

13

A. The digoxin was given in Hamilton,
0.060 milligrams orally on April 30th, 1983 at 0800.

14

15

Q. Thank you, Doctor. Then one of
the two documents which we have marked this morning
that has been provided to us by Mr. Roland, I'm sorry,
sir, I didn't make a note of the exhibit number of
that sheet, Exhibit 232-A the memorandum which you
prepared setting out further changes, as I read it,
deals with changes to be made to the last column of
the information that is concerning autopsy digoxin
levels and the changes relate to the hours after death
at which the autopsy was conducted. Do I have that
correctly?

24

25



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A. Yes, that is correct.

3

Q. And then there is another change

4

noted as well and that is in one case, Case No. 2 of

5

the overall computer printout, you now have an entry

6

for an ante-mortem digoxin level different than the

7

one set out in the printout; am I interpreting

8

that correctly?

9

A. Yes, the date, the date is

different.

10

Q. The date is different?

11

A. Yes.

12

Q. It should simply be reversed?

13

A. Right.

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Q. Doctor, on the basis of the summary which we looked at a few moments ago, Exhibit 230, in which you summarized the results of all the post mortem blood digoxin data, there is an indication, obviously, that in all of these cases a level of greater than 5 nanograms was recorded when assays were run.

Can you tell me, were any of these children not known to have been on digoxin prior to the dates of their deaths?

A. No. All of these patients were on digoxin prior to their deaths.

Q. And we reviewed, doctor, the type of information that is set out in the printout. Just so that I am clear, I take it that there are a number of pieces of information, if you will, in respect of these patients, that we cannot derive from this printout, and that is, first, the age of the particular patient?

A. That is correct.

Q. Secondly, doctor, I take it there is nothing on the face of this printout, or perhaps you can tell us if you know, whether or not all of these patients were cardiac patients or whether this is a more representative list, including non-



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cardiac patients?

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A. No. These are all

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patients. I think these are all patients.

5

Q. I'm sorry, I know they

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were all patients, but were they all cardiac patients,
or do you have that information?

7

A. No, not all cardiac patients.

8

All comers, all variety of patients in addition to
cardiac patients.

9

10

Q. We can see that -- perhaps

11

one indicator of that is the indication of the ward
upon which the particular patient died; in some
cases, the cardiology wards and, indeed, in many
cases, it appears to be the ICU and, in many cases,
Ward 7G.

12

13

14

15

A. Well, I don't know if that

16

statement is correct, Miss Cronk, because there are

17

cardiology patients on these other wards. So I

18

don't know that you could tell that from that column.

19

Q. In any event, if we needed

20

a breakdown as to how many of these patients were

21

cardiac patients, I take it we would have to have

22

resort to the actual medical records for each

23

patient to determine that?

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A. Yes. I have those, if you

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want that.

Q. Thank you, doctor.

Doctor, can you help us as well --

THE COMMISSIONER: I'm sorry, but what do we mean by cardiac patient? Surely, a patient who is receiving digoxin must have some heart problem, must he not?

THE WITNESS: Yes. But --

THE COMMISSIONER: Do you give digoxin to patients who do not have heart problems?

THE WITNESS: No -- well, we did post mortem digoxins on all the cases, and these are all on digoxin, so they would all have signs of heart failure and some form of heart disease but they may not have died specifically from the heart disease.

THE COMMISSIONER: I see.

MS. CRONK: Q. Then, doctor, with respect as well to the other information which, unless I am incorrect, does not appear to be on the chart itself, can you help us - do you know, in respect of each of these cases whether or not any of these patients exhibited, prior to their deaths, symptoms of digoxin toxicity?

A. To the best of my knowledge, and this is not something that I personally conducted,



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but -- these cases have all been referred also to the Coroner's office and also to Dr. Rowe, and I have asked him and he said, no, that there were not signs of digoxin toxicity in these cases.

Q. "He" being Dr. Rowe?

A. "He" being Dr. Rowe.

Q. Doctor, I take it that one of the things that we can learn from this printout is the time at which the sample was taken at autopsy in relation to the time at which the last known dose of digoxin was administered.

In other words, by comparing that time interval, we can determine from this printout whether or not the sample was premature in relation to the giving of the last dose of digoxin? Do I have that correctly?

A. I'm not sure what you mean by "premature".

Q. If there was any difficulty in terms of the timing at which the sample had been taken, we can examine that issue by looking at the time at which the autopsy was conducted and comparing that time to the time at which the last dose of digoxin was given. We can determine the time interval that elapsed between those two events by the



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printout,

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A. Yes, that is correct.

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THE COMMISSIONER: Those hours
on the last column are hours after what?

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MS. CRONK: I understood the
doctor to say hours after death.

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8

THE WITNESS: That is hours after
death.

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Q. In respect of the hours
that are indicated there, doctor, can you tell us
whether or not the hour indicated in that column
is intended to convey the time at which the sample
was taken?

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A. Yes. That would be very
close because we would take the blood sample first
thing; so that is as close as we could get to that.

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Q. To get, doctor, an accurate
picture of the time interval between the giving of the
last dose of digoxin and the time of the taking of
the autopsy sample, we would have to consider, first,
the information that you have provided as to the
exact time when the last dose was given; we would
have to consider then as well the time of death and,
as well, the time of the beginning of the autopsy,
the time when the autopsy sample was taken for



1
E6 2 digoxin assay purposes. Do I have that correctly?
3 A. Yes. If you want to compare,
4 yes.
5 Q. Doctor, can we take just
6 a moment, if you would, and could you explain to us
7 what the various indications are with respect to
8 sample types that appear in the last column.
9 Obviously, the "HRT" appears to
10 refer to the heart. Is that a specimen of heart
11 blood?
12 A. That is heart blood.
13 Q. Then we have the letters
14 "SSS". Is that sagittal sinus?
15 A. Yes. The additional 'S'
16 is just 'superior', which is the one that is meant
17 when just "SS" is used, "sagittal sinus".
18 Q. Then we see the initials
19 "IVC". Can you help me as to what that refers to?
20 A. That is inferior vena
21 cava.
22 Q. Then we see "SVC". What
23 does that refer to?
24 A. "Superior vena cava".
25 Q. Then we see "VEN". Is that
simply a venous sample?



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A. It is a vein; not stating

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which vein.

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Q. What are the initials

5

"VIT", which we see in some of these cases?

6

A. That is "vitreous".

7

Q. Is that the vitreous

humor or eye fluid?

8

A. Yes, that is correct.

9

Q. Then we see the initials

10

"GTR". What do they refer to, doctor?

11

A. This is this unfortunate

12

expression, "gutter fluid" or "gutter blood fluid".

13

This is bloodstained fluid, usually in the abdominal
cavity. It is not a blood sample.

14

Q. Unfortunate, only in the

15

choice of words to describe it?

16

A. Yes, that is correct.

17

Q. Then we see, doctor, the

18

initials "SCL". Can you help me with that?

19

A. That is "subclavian vein".

20

Q. So, that is a blood

sample?

21

A. Yes.

22

Q. Then we see "FEM", and I

23

have taken that to refer to the femoral vein?

24

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E8 2 A. That is correct.
3 Q. That is again a blood
4 sample?
5 A. Yes.
6 Q. Then on occasion, once or
7 twice, we see "BDY". What does that refer to?
8 A. That is "body fluid", which
9 is the same as "GTR".
10 Q. That is the same as the
11 "gutter blood" sample, so-called?
12 A. Correct.
13 Q. Then, doctor, if we turn
14 to the next page, we see, in one particular case - and
15 I will be returning to this case - the initials
16 "RTA". Can you help me as to what that refers to?
17 A. That is blood from the
18 right atrium .
19 Q. Similarly, if we see then
20 "RTV", are we talking about the right ventricle?
21 A. Yes.
22 Q. That, again, is a blood
23 specimen?
24 A. Yes.
25 Q. And then "LTA". Can you
help me?



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A. That is left atrium .

Q. Thank you, doctor.

Doctor, dealing with the particular levels that were obtained as recorded in the last column, we see that there are a number of cases where the levels recorded are greater than 6; some are 8 nanograms or more; 9 nanograms or more.

You have told us that one of the things that we can examine from the information contained in the printout is the time at which the sample at autopsy was taken in relation to the time at which the last dose of digoxin was given.

Can you help us, doctor. Do you have any information available to you which can help us as to whether or not any of these patients were experiencing at the time of their death, in clinical terms, a difficulty with their renal function or their excretion function?

A. Yes. I have some information on that.

Q. I take it then that there were some who appear, from the information obtained in the medical record on the patient, to have been experiencing some renal malfunction or difficulty with excretion?



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A. Yes, that is correct.

Q. Can you tell me which of these cases that applies to?

A. Yes. Nos. 1, 4, 5, 9, 10, 11, 13, 14, 16, 19, 20, 21, 22, 24, 26, 28, 32, 33, 34 and, on my sheet, 35 and 36, I am not sure what they are - I will just check the numbers.

Q. The document number on case 35 is what?

A. 82-297.

Q. And on 36?

A. 83-225.

Q. Doctor, in very rough count, I make that to be 20 cases; is that correct?

A. No, there are 21. I missed one somewhere.

Q. I may not have counted them correctly, doctor.

Of the cases which you reviewed or had reviewed for these purposes, were there any cases where it was unclear, on the face of the medical record, as to whether or not the patient had been experiencing, in clinical terms, excretion or renal difficulty at the time of death?

A. Yes.



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Q. How many of those cases,
first of all, doctor, are we talking about and,
second, which of these 37 are we talking about?

A. Could you just wait for
one moment, please.

Q. Thank you.

A. There are two cases where
I could not find in the chart that a renal function
had been measured near the terminal event in terms
of either the BUN or the creatinine, which are
chemical measurements of renal function. One of
those is No. 27 and one is No. 18.

Q. Any others in that category,
doctor?

A. Since talking to you, I
double-checked that also, and there are two others;
Nos. 3 and 7, where the last BUN in the chart
was two days and three days respectively prior to
the death. So, it is possible in those that there
may have been, at least chemically, but it was not
checked. So, using that data, those two, I'm not
certain about.

Q. Would it then be fair of
me to suggest that, on the basis of those numbers,
doctor, there are 21 of the 37 cases where there is



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some evidence apparent on the clinical medical record of the child that the patient was experiencing renal failure or excretion difficulties at the time of death?

A. Yes, that is correct.

Q. And there are four other cases which potentially fall into that category but you have been unable to confirm that on the basis of the information contained in the medical charts?

A. That is true, except that I did not read all of the medical notes to see whether there was clinical evidence of renal failure, anuria and things like that.

I looked at the chemistry --

Q. You were looking at the measurement of the BUN and relied on that?

A. That is right.

Q. Doctor, can you help us as well with respect to all of these cases contained on the printout. In any of these cases, from a pathologist's point of view, given that autopsies were conducted in each case, was there any case set out in this printout where the involved pathologist at your Hospital was unable to pinpoint an anatomical cause of death for the patient involved?



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A. That is a very big question, Miss Cronk. I think we found marked anatomical changes in all of these cases. Quite a few of these cases are medico-legal cases and specifically what all of the findings would be and whether they completely explain every case, I don't know. But, as far as I know, they do.

Q. Perhaps I could try the question in this way, doctor: To the best of your knowledge, in any of these cases, were there insufficient findings evidenced at autopsy to account for death?

A. To account for the digoxin levels, you are asking?

Q. To account for the death of the patient.

A. To account for the death --

Q. Was there any case, to your knowledge, where there were insufficient pathology findings or indicators present at autopsy to account for the death of the involved patient?

A. In all of these cases with the renal failure, the 21 cases?



F/BB/ak

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Q. I'm sorry, I'm talking now about

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all 37 cases on the printout.

4

A. Oh.

5

Q. Perhaps that information isn't

6

readily available to you.

7

A. I think that is correct but I

8

would have to look at each one individually to be
absolutely sure of that but I think that is correct.

9

Q. All right. Doctor, dealing

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again with the entire group of the 37 cases. To

11

the best of your knowledge, was death attributed by

12

the involved pathologist or by the coroner or the

13

coroner's offices, and in any of these cases to

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digoxin intoxication?

15

A. No, the digoxin values were

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not considered important in any of these cases, I

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Q. Doctor, I would like to deal

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with the higher levels in a moment but there is one,

19

apparently one matter with respect to the sampling

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times that I would like the benefit of your comments

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upon, if you are in a position to provide it. It

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appears on the basis of the times for the last dose

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of digoxin set out on the printout that there are

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several cases where the involved patient did not

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receive digoxin prior to death for at least 12 hours if not more yet the digoxin level recorded on the postmortem sample was greater than 5 nanograms. Based on my review only, Doctor, of the list, it appears that there are at least 19 or 20 such cases where digoxin does not appear to have been continued or administered for 12 hours prior to death. Have you examined the data contained on this computer printout and with that view in mind can you express any opinion as to whether or not in many of these cases that appears to be the case, that a number of these patients had not received digoxin for a significant period of time prior to death?

A. Yes, I have looked at that and also in using these revisions that I have given you there is a little bit of question as to whether there are 17 or 19 on my list.

Q. All right.

A. But I can give you briefly a rundown of those if you want.

Q. Be it 17 or 19, can we agree then that there appear to be a large number of cases of 37, either 17 or 19 where that appears to have been the case?

A. That is correct.



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Q. All right. Similarly, Doctor, I am curious only about the timings listed for the giving of the last dose of digoxin. In a number of these cases it appears that there doesn't appear to be a consistency as to the time at which the last dose was given. I don't know that you are in a position to do so, but if you can help us with that we would be grateful. I am referring for example to a number of cases where the last of digoxin appears to have been given at 1:30 in the morning, at 3:00 in the morning, at 7:00 a.m. The evidence which we have heard from a number of witnesses to date has been that at least on Wards 4A, 4B digoxin as a matter of routine if given was given at 9:00 in the morning and 9:00 in the evening, twice in a 24-hour period. Does that accord with your knowledge of the circumstances at least on Wards 4A, 4B, the timing of giving the doses?

A. Yes, that is correct.

Q. All right. To the best of your knowledge, Doctor, is digoxin given at times different than 9:00 a.m. and 9:00 p.m. on other wards throughout the Hospital?

A. I can't answer that specifically.

Q. All right.



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A. I know some of these cases, they were pressing clinical situations which led to digoxin being given to them at unusual hours.

Q. I take it at least in some of these cases, Doctor, it may well be that a digitalized dose of digoxin was ordered and digoxin therapy was commenced for the first time for the involved patient and we might see some irregularity in hours due to that event?

A. That is correct.

Q. All right. Doctor, with respect then to the levels themselves that you mentioned a few moments ago, there are, as we can see, a number of cases where the levels appear to be high. I am referring first to the case of Case No. 17 where the result of 18 nanograms on a gutter blood specimen was obtained. Can you tell me, Doctor, whether or not that gutter blood sample and that level were obtained during the course of what we have heard described here at the Commission as a gutter blood study that was undertaken by the Pathology Department at the Hospital for Sick Children in co-operation with the Centre of Forensic Sciences. This is Case No. 17 on your printout.

A. I think this one was done



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2 before that study got started.

3 Q. All right. In respect of the
4 following gutter blood samples, we see in Case No. 19
5 that there is a level of 7.8 attributed to a gutter
6 blood sample.

7 A. Yes.

8 Q. And we see in Case No. 21 that
9 there appears to have been two gutter blood samples
10 with levels of 11.2 and 10.3 and of course we then
11 come to Case No. 23 with two other gutter blood
12 samples of 169 nanograms and 17 nanograms. Were
13 those cases, after Case No. 17, where gutter blood
14 samples were tested, part of the gutter blood protocol
15 that was developed between the Hospital and the
16 Centre of Forensic Sciences?

17 A. I think I have the papers with
18 me to check that exactly to know which ones were
19 part of that study and which ones weren't, which I
20 can look up if you want me to.

21 Q. All right. Well, we will be
22 having a break later this morning, Doctor, and if
23 you could take the time then, perhaps you could let
24 me know after the break.

25 But I take it for present purposes
that Case No. 17 and that gutter blood sample was



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tested at the Hospital prior to the gutter blood study being undertaken with the Centre of Forensic Sciences.

A. That is correct.

Q. All right. And that may be true of Case Nos. 19 and 21, and you will check that for us at the break?

A. Yes.

Q. All right. Now, Doctor, with respect to Case No. 23 and the level of 169 nanograms on what is described as gutter 1, do I take that correctly to be one of two gutter blood specimens tested?

A. Yes.

Q. All right. And was that case and those samples part of the gutter blood study that was undertaken?

A. Yes, that is correct.

Q. Well, Doctor, I will return then to those levels on that particular patient when we come to talk about the gutter blood study. May we turn then to the second category of highest levels recorded, if I can describe them that way, on your printout and if we turn, Doctor, to page 2 of your summary we see that the second highest round numbers



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recorded on that printout are those which were
obtained in Case No. 31 and there are levels
respectively of 32.2 nanograms on a heart specimen,
we see a sequence then of results 24.5 nanograms,
29 nanograms. Do the results recorded on Case No. 31
refer to levels obtained on Gary Murphy?

A. Yes, that is correct.

Q. All right.

Mr. Registrar, perhaps you could
show the Doctor Exhibit - I believe it is No. 226.

Doctor, Exhibit No. 226 in these
proceedings has been filed as one of the reports
prepared by Mr. Cimbura of the Centre of Forensic
Sciences concerning his assays conducted on postmortem
specimens from the body of Gary Murphy. The one
that you are looking at is dated May 16, 1983. The
first six samples reported, or at least dealt with
in this report and the levels recorded in respect
of each appear to be the levels which are set out on
your computer printout on various samples from the
body of Gary Murphy. For example, Sample T-1 on
Mr. Cimbura's report is indicated on his report to
be a specimen of blood from the heart. The blood
was found to contain 32.2 nanograms. That is the
first level recorded on your printout from a heart



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specimen. Do you see that, Doctor?

A. Yes.

Q. All right. I take it then that the first six results on blood or serum specimens tested by Mr. Cimbura and set out in his report are those six results which we see contained on your printout beside Case No. 31.

A. Yes.

Q. So that we have a level of 32.2 from a heart specimen.

A. Yes.

Q. A level of 24.5 from a blood specimen from the right atrium, a level of 25.2 from a specimen of blood from the left atrium, a level of 29 nanograms, which is shown on your printout on his report as blood from the right ventricle, a level of 18.9 on blood from the sagittal sinus and a level of 21.1 on serum from the sagittal sinus and those are the results contained on your printout, Doctor?

A. Yes.

Q. All right. So, I take it then that all of the results disclosed for Gary Murphy on your printout are those results obtained at the Centre of Forensic Sciences?



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A. That's correct, they were
actually taken off this sheet.

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Q. And we see, Doctor, that in
respect of the results obtained by Mr. Cimbura with
respect to Sample T-1, the blood from the heart, and
Sample T-5, at least one specimen of blood from the
sagittal sinus, he indicates what the level was that
was recorded as a result of his assays and he
describes it as of digoxinlike substances identified
mainly as digoxin. Then we see with respect to the
other four samples that are recorded that once again
he sets out the level that was achieved, the conclusion
of the assay, but he describes these as being of
digoxin and/or digoxinlike substances.

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Now, I take it, Doctor, that in order
to prepare your printout following the death of
Gary Murphy when these tests were conducted that
Mr. Cimbura's report concerning these various
specimens was ultimately provided to you?

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A. Yes, that is correct.

Q. All right. To help you,

Mr. Cimbura, as you are perhaps aware, has given
evidence in these proceedings and he has testified
that when he uses the words "of digoxin and/or
digoxinlike substances", it means that the tests that



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he conducted were conducted by the RIA procedure alone and that the end result, having used the RIA procedure alone he didn't know whether he was recording digoxin or digoxinlike substances or a combination of both. That evidence, Mr. Commissioner, is found at Volume 52, page 1631. That leaves us then, Doctor, or at least me in some puzzlement as to what he meant when he referred to the two other specimens: the blood from the heart and the blood from the sagittal sinus as being of digoxinlike substances identified mainly as digoxin. What did you understand those results to mean when you obtained them on Gary Murphy, Doctor?

A. Well, I didn't look at it specifically with respect to this case but in my discussions with Mr. Cimbura on some of the other ones I understood it that he sometimes differentiated between digoxin, specific digoxin and other compounds that would react like it and in some of the reports that he has given to me on the telephone they have been using similar terminology. What I understood by this was that where he said digoxin specifically that meant specifically digoxin; when it said digoxinlike, that this represented chemical material or material in the sample that was cross-reacting like



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digoxin but probably wasn't digoxin. This is the way I interpreted it.

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Q. Doctor, who conducted the autopsy of Gary Murphy at the Hospital for Sick Children?

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A. Dr. Smith.

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Q. All right. I take it that these samples that were provided to the Centre of Forensic Sciences for assay purposes from Gary Murphy were provided from the Hospital for Sick Children as a result of the autopsy?

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A. Yes, that is correct.

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Q. Was a list kept, Doctor, of the various specimens that were provided to the Centre?

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A. Yes.

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Q. All right. Do you have that list with you?

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A. Yes, I think so.

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Q. Perhaps to help you, Doctor, I am showing you what is described as a Case Submission form for the Centre of Forensic Sciences. It appears to be a list of various specimens that I take to have been provided by Dr. Charles Smith, the Department of Pathology at the Hospital to the

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Centre for assay purposes on Gary Murphy. Is this the list of the inventory of specimens that were kept at the Hospital?

A. Yes, it is.

THE COMMISSIONER: Yes, that will be Exhibit 234.

---EXHIBIT NO. 234: Case Submission Form from the Centre of Forensic Sciences.

MS. CRONK: Q. Doctor, if you have Mr. Cimbura's report of May 16 before you there are a number of matters I would simply like to clarify if I could with respect to the samples that were provided to the Centre. You will see that the first specimen on Mr. Cimbura's report is that which we have referred to a few moments ago, a specimen of blood from the heart bearing Seal No. ID83268, that is the first specimen dealt with on Mr. Cimbura's report. That number, that seal number doesn't appear on Dr. Smith's inventory list. However, the second number which appears on his list is a specimen of mixed heart blood taken at 4:45 hours and that bears Seal No. ID83268. Do you know, Doctor, whether or not those specimens were in fact the same or was there a separate specimen of blood from the heart



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that was provided to Mr. Cimbura other than as set
out on Dr. Smith's list?

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A. Well, I have been over this
with Dr. Smith and as I understand it from him
T-1 on Mr. Cimbura's list is the second one on the
Smith list, which is Id83268.

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Q. They are in fact then the
same specimen?

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A. That is the same specimen.

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Q. All right. Dr. Smith refers
to it as a mixed heart blood specimen, Doctor. Can
you help us as to what that refers to?

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A. Yes. He took as you will see
here a number of blood samples from the heart and
after obtaining these samples he went back to try
to obtain whatever blood was left that he could
obtain from the heart by putting a needle in the
various chambers one after the other. So, it was
sort of a pulling of the blood from the various
chambers that he could obtain that was blood that
was left and he called that mixed heart blood.

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Q. And this, Doctor, like the
others contained on your computer printout I take
it would have been a specimen drawn at the beginning
of the autopsy?

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A. Yes, that is correct.



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Q. So that the reference to "mixed heart blood" simply means it is a remnant of the blood from the four chambers of the heart after other heart blood specimens have been taken?

A. Yes.

Q. And that is the specimen that resulted in a level of 32.2 nanograms as reported by Mr. Cimbura?

A. Yes.

Q. Doctor, we then see the next three samples referred to on Mr. Cimbura's list are all blood specimens taken from various locations in the heart; can you help us, or do you have any information available to you as to how all of these blood specimens were taken, the actual method employed by Dr. Smith?

A. Yes. These were taken by direct cardiac puncture using a syringe and needle.

Q. And by cardiac puncture I take it that the chest wall of the patient would first have been opened on autopsy?

A. Yes. That is really the right thing, the heart is sitting right there in front of him, exposed.

Q. The needle and the syringe would



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then have been inserted and the blood drawn directly back into the syringe for the purposes of obtaining the specimen?

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A. The needle would have been inserted into the chamber and blood drawn back into the syringe.

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Q. And we see one specimen was taken from the right, from each of the right and left atria, and one from the right ventricle. We then see on Mr. Cimbura's report of May 16th, that he received two specimens from the sagittal sinus; one he describes as blood and one as serum. Can you help us as to how those specimens were taken?

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A. Well, to the best of my understanding and as best as Dr. Smith can recall now, the first thing he did in this case was to obtain a sagittal sinus blood sample. So he inserted a needle into the sagittal sinus and drew back a number of syringefuls of blood, and one of those, No. 25 on Mr. Cimbura's list, was sent directly to the Centre for Forensic Science, and several samples were sent to the Hospital labs for general biochemistry, hematology and so on, because he did a variety of tests.

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As I understand it there was some serum left over from some of the sagittal sinus blood



G.3

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which the police later picked up and sent to the Centre of Forensic Sciences and I think that - Dr. Smith at least thinks that is T27, so to the best of my knowledge that explains that.

Q. I take it then, Doctor, that Dr. Smith drew, as you have told us, a number of specimens of blood if you will from the sagittal sinus at the beginning of the autopsy, at least one of those was forwarded directly to Mr. Cimbura for testing?

A. Yes.

Q. The balance of the syringes were kept at The Hospital for Sick Children, but ultimately one of those, a further serum specimen was resent, or sent over to Mr. Cimbura for assay and we see the results as Nos. T5 and T27 on Mr. Cimbura's report?

A. Yes, that would explain why one is blood and the other is serum also.

Q. The one that was blood I take it would be the one that was sent in the first instance to Mr. Cimbura?

A. That is correct.

Q. And the one that was serum would be the one that was left after the various virology and hematology tests had been conducted?



G.4

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A. Right.

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Q. Doctor, if you would, would you turn to page 3 of Mr. Cimbura's report, and you will see about midway down the page in the category "Other Items" two other specimens referred to, both of which appear to be serum from Gary Murphy; T31, the second of the two, appears to be serum insofar as Mr. Cimbura was aware, taken while Gary Murphy was alive on March 30th, 1983; but Specimen T26 appears to be serum, at least again insofar as Mr. Cimbura is aware, taken from the heart of the deceased after death, and that bears Serial No. ID72474, and that appears to be another postmortem serum sample?

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A. You are talking about T26 here?

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Q. Yes, Doctor.

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A. Yes. Dr. Smith thinks that this is serum from the heart blood sample that was sent to the Hospital lab for analysis, and that this would be part of the specimen that was left after some tests had been done on it but he is not absolutely sure of that, that is what he thinks it is.

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Q. We have heard evidence previously, Doctor, from Dr. Freedom, as to the postmortem digoxin levels that were recorded on various specimens assayed at The Hospital for Sick Children; and one of those



G.5

1
2 reported in the medical record of Gary Murphy is a
3 specimen of heart blood taken on April 24th, the day
4 after Gary Murphy's death, at 6:45 p.m. That resulted
5 in a level of greater than 5 nanograms. That is
6 contained in Gary Murphy's medical report, Exhibit 172,
7 Mr. Commissioner, at page 147.

8 There was a further, and a second
9 specimen assayed at the Hospital of heart blood which
10 we have heard was taken, from Dr. Soldin, was a heart
11 puncture by Dr. Cloutier and that was taken at 11 p.m.
12 the night of Gary Murphy's death, after his death,
13 and that resulted in a level of 18.7 nanograms when
14 measured on the IRA. Do you know Doctor, whether or
15 not T26, the serum specimen that is included in
16 Mr. Cimbura's report, is a specimen that was assayed
17 at The Hospital for Sick Children?

18 A. What I have written here is -
19 after discussing this specifically:

20 "Dr. Smith thinks this is serum from
21 the heart blood sample given to the
22 TDM ... "

23 that is the Therapeutic Drug Monitoring Lab:

24 " ... at the Sick Children's Hospital,
25 or possibly to one of the other labs
and he thinks it was the TDM lab but



G.6

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"he doesn't designate it further than that."

I take it then, Doctor, you can't help us?

A. No.

Q. As to which of the two blood and serum specimens that were tested at The Hospital for Sick Children, which of the two appears to be the serum sample that was then retested at the Centre of Forensic Sciences?

A. No, I can't answer that.

Q. Doctor, I take it that in due course after the assays were conducted by the Biochemistry lab at the Hospital the results obtained in those tests were as well provided to you in addition to the ones from Mr. Cimbura's laboratory?

A. Yes.

Q. Doctor, would I be correct in assuming that the results ultimately obtained by Mr. Cimbura and reported to you corroborated the results that had been obtained at the Hospital to the extent that the levels recorded by Mr. Cimbura on various blood and serum specimens were indeed high levels as had been the ones at The Hospital for Sick Children?



G.7

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A. What was the last part?

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Q. Indeed had been high just as the
ones at The Hospital for Sick Children had been?

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A. Yes, that is correct.

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Q. Doctor, we see on page 3 of
Mr. Cimbura's report, in his footnotes, his conclusions
with respect to a number of the specimens, and he
indicates in Footnote 1:

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"The concentrations of digoxin
detected in the blood from the heart
and sagittal sinus are clearly above
the therapeutic range for postmortem
blood. According to published reports
these concentrations are in the range
of values found in postmortem blood
or serum from cases of fatal digoxin
poisoning."

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Doctor, are you sufficiently familiar
with the literature published concerning digoxin
levels in tissue specimens and postmortem specimens
to offer us your opinion as to whether or not you
agree that the concentrations found by the Centre of
Forensic Sciences are in the range of values reported
in the literature to be the range for fatal digoxin
poisoning cases?



G.8

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A. First of all, I would like to say I am not an expert on this, but I have read a number of articles and I think this statement of Mr. Cimbura's to my knowledge is correct, this is the usual range reported, these are in that range.

Q. We have moved some considerable way away from the printout of 37 cases but I have not forgotten it. If we could refer to it again very briefly; we see that the highest numbers recorded are those obtained as a result of assays conducted on gutter blood specimens, and we will return to the one gutter blood specimen that had a level of 169 nanograms.

The second grouping of highest levels, if I can express it that way, are those on Gary Murphy that we just looked at.

Doctor, when this data became available to you in the form which you presented it to us in this printout, were you on the basis of this data able to form any conclusions insofar as the results of the various pathological examinations that had been conducted were concerned?

A. I am not sure exactly what you are asking me now? Is this with respect to all of these results?



G.9

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Q. Yes.

A. General conclusions from all these results?

Q. Yes, Doctor.

A. Well, after looking at this data the sagittal sinus values look lower than other values, that is one observation, in general. Another is aside from the Murphy case which we just discussed and this one gutter sample, or the two gutter blood samples, the range, the highest one outside of those on blood samples is 12.6 and two values of that level in this printout, one is No. 6 and there is a second one somewhere.

Q. 32?

A. 32.

Q. I thought these values, certainly the first one when we obtained it, was higher than others, and I spoke to Dr. Tepperman about that, and he told me that for patients on digoxin, depending on what the circumstances were, levels up to 12.8 were acceptable. I asked him where he got this value of 12.8 and he told me that he discussed this with people at the Centre of Forensic Sciences, and they had evidence from the literature, I presume, or perhaps not, but he was satisfied from discussions



G.10

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with them that this level was still within the range acceptable for an autopsy digoxin level post mortem, and this is the highest value on this list.

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Q. In dealing with those two cases, Doctor, where a level of 12.6 on a heart blood specimen that was obtained, we know at least one of those cases, Case No. 32, there was evidence contained in the medical record of the patient indicating, or evidence of renal failure or renal malfunction at the time of death, do I have that correctly?

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A. That is correct.

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Q. But in the other case where a level of 12.6 was recorded, that is Case No. 6, that does not appear to have been the case?

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A. Yes, that is correct.

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Q. Doctor, I take it then if we deal then with the highest numbers that were recorded, we know first that there are those which apply to Gary Murphy; secondly there are those which apply to the gutter blood specimen; and thirdly the next highest number numerically are the 12.6 heart blood readings you have just indicated. It would seem that there are a number of matters that emerge from the data.



G.11

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A. Yes.

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Q. And first there would appear to

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be a number of cases where in the absence of any

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evidence of renal failure, elevated digoxin levels

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were seen post mortem, notwithstanding that digoxin

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had not been administered for a minimum of 12 hours

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prior to death of the patient. Am I correct in that

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interpretation of that, Doctor?

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A. Yes, that is correct.

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Q. Am I correct as well that even

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in those instances where there was some evidence of

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renal failure, there would still appear to be elevated

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levels notwithstanding that digoxin in some cases

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again had not been administered for, in some cases,

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a minimum of 12 hours prior to the death of the

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patient?

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A. Yes.

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Q. Would I be correct as well

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Doctor that having regard to the actual numbers that

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are contained in your printout, with the exception

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of Gary Murphy and the numbers obtained at the Centre

23

of Forensic Sciences and the assays done there, there

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is no case since March 24th, 1981, where a postmortem

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digoxin level in the late sixties or early seventies

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has been recorded, 68, 70, 72, we are not looking

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G.12

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at numbers of that kind with the exception of Gary
Murphy?

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A. That is correct, yes.

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MS. CRONK: Mr. Commissioner, would
this be a convenient time to take a break?

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THE COMMISSIONER: Yes, 20 minutes.
--- Short recess.

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H-1
DP /PS

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---On resuming.

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THE COMMISSIONER: Yes, Ms. Cronk.

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MS. CRONK: Thank you, sir.

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Q. Dr. Phillips, continuing to deal with your printout and the levels that we have been looking at, I take it that there are a number of possible explanations for elevated postmortem digoxin levels of the kind that were seen and, in no particular order of preference or priority, I suggest that at least one possible explanation is that the sample that was taken at the autopsy and then sent for digoxin assay was taken prematurely. By that I mean within too close a time period after the last dose of digoxin was administered. That theoretically is one possible factor which could explain unduly elevated levels of digoxin post mortem. Am I right.

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A. Yes, I think so.

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Q. If we were examining other possible explanations that arise, the second possible explanation would be that the particular patients involved were, at the time of their death, experiencing renal malfunction or renal difficulties of a nature sufficient to cause elevated digoxin



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2 levels when measured post mortem. That would be
3 another possible explanation?

4 A. Yes.

5 Q. The third explanation, at
6 least that occurs to me, Doctor, about which we
7 have heard a great deal in the last week of
8 evidence, from Dr. Spielberg, is that there may
9 be a redistribution of digoxin within the body of
10 the patient that occurs after the circulatory system
11 stops functioning, that is, at death. If that is the
12 case, could it result in a higher level of
13 digoxin, or a high level of digoxin when the sample
14 is measured at post mortem

15 Would you agree with me there?

16 A. Yes.

17 Q. Another possible explanation
18 which occurs to me is that some of these patients
19 may in fact have their deaths attributable to digoxin
20 intoxication. That, too, in the realm of
21 possibilities, could account for elevated postmortem
22 digoxin levels.

23 A. Yes.

24 Q. And finally, I take it that
25 there would be, as a possible explanation, the
operation of some factor which is not yet completely



1
2 understood nor, indeed, it may well not have been
3 identified by modern science to date, which could
4 account for elevated levels of this kind.

5 A. Yes.

6 Q. Are there any other possible
7 explanations, Doctor?

8 THE COMMISSIONER: What was that last
9 one? Are you talking about substance X -- our old
10 friend?

11 MS. CRONK: Substance X, yes, sir.

12 Q. Are there any other explanations,
13 Doctor, that occur to you, as possible explanations?

14 A. I am not sure what all is
15 included under redistribution of digoxin after the
16 circulation stops. If this means dig. being
17 released from tissue cells into the serum, I
18 presume that is what is meant by that.

19 MR. ROLAND: Just so we are clear,
20 as I understood the evidence last week from Dr.
21 Spielberg there may not only be redistribution after
22 the circulation stops but there may be redistribution
23 before the circulation stops, before death.

24 THE COMMISSIONER: That is the death
25 of the tissues.

MR. ROLAND: The death of the tissues,



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2 but circulation is still functioning.

3 MS. CRONK: Fair enough.

4 Q. Doctor, other than those that
5 have been mentioned, in your review of this data, were
6 there explanations or possible explanations for these
7 elevated levels that presented themselves to you other
8 than the ones that have been mentioned?

8 A. No.

9 Q. Doctor, dealing then with those
10 possible explanations, if we could deal first
11 with the sampling issue, and by that I mean the
12 time at which these various samples were taken,
13 and by no means do I intend to go through each of
14 these cases, but for the purposes of illustration
15 could we take first Case No. 2 on your printout.
16 We can see in that case that a post mortem digoxin
17 level of 8 nanograms was realized on a heart specimen
18 taken at autopsy. You have told us that the
19 samples were drawn at the beginning of autopsy and in
20 this case the printout indicates that the autopsy
21 was commenced some 20 hours, you have told us, after
22 death.

23 By my calculations, if we look then
24 to the time at which the last dose of digoxin was
25 administered that means at a minimum that the sample



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2 was taken some 27-1/2 hours after the last dose of
3 digoxin had been administered.

4 Do you agree with those calculations,
5 approximately?

6 A. I have not done that calculation,
7 but I am sure you are correct.

8 Q. Even if it were the 20 hours,
9 Doctor, as opposed to the actual time interval between
10 the administration of the last dose of digoxin and
11 the time of death, even at a 20 hour interval I take
12 it we can agree that there would be no question
13 of premature sampling in that case.

14 A. Well, I think for premature
15 sampling, you would have to compare the time of
16 death with the time of last digoxin dose, rather than,
17 as I understood the way you define premature sample,
18 rather than how many hours postmortem.

19 Q. I'm sorry, Doctor, perhaps I
20 have not been clear.

21 We know that in this case the autopsy
22 was commenced some 20 hours after death. Am I
23 correct in that?

24 A. Yes.

25 Q. And you have told us that the
samples were taken at the beginning of the autopsy.



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A. Yes.

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Q. So the postmortem sample, the heart blood specimen in this case which resulted in a level of 8 nanograms, was taken we know at least 20 hours after the death of the patient.

A. Yes.

THE COMMISSIONER: I think what the doctor is saying is that the thing to compare is the last digoxin dose and the death because there is no circulation after death. Isn't that what you are saying?

THE WITNESS: That is right.

THE COMMISSIONER: So the 20 hours really does not make that much difference.

Q. If we take a look, then, Doctor, at the time at which the last dose of digoxin was given, we see that it was given at 8:30 a.m. on the 2nd of April, 1981.

A. Yes.

Q. And the child died at 1600 which is 4 p.m. in the afternoon?

A. Yes.

Q. Once again, more than six hours after the time of administration of the last dose of digoxin?



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A. Yes.

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A. Yes.

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A. Yes.

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Q. We know as well, Doctor, that in that case the last ante mortem digoxin level that was obtained was obtained on the day of death because you told us that the numbers are reversed and that should really read the 2nd of April and that the level was 3.4 nanograms.

Q. What we don't know, Doctor, is the time at which that sample was drawn but if we compare the last known ante mortem level which is available on that case to the post mortem digoxin level of 8 nanograms in the heart, there appears to be an elevation factor of something under 2.5 between those two levels.

Q. Doctor, if we can for the purposes of illustration take a look at Case No. 3, the immediately following case, this is a case where you have told us there was not, on the basis of your review of the medical record, any evidence of renal failure or renal shutdown that appeared to be apparent on the face of the medical record at the time of the patient's death and this is one of the cases where there is no ante mortem digoxin level



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2 available to us for the purposes of comparison,
3 but we do know that the last dose was given on April
4 11th at 10:30 in the evening and the child, from
5 the information contained on the printout, appears
6 to have died at 4:10 a.m. on April 12th, about six
hours later, after the last dose.

7 A. Yes.

8 Q. And the post-mortem level in
9 this case was 9.5, so we do not really know in this
10 case, Doctor, what the elevation factor was on the
11 basis of the information that is available to us from
12 the printout because we do not know what the ante-
mortem level in fact was prior to death.

13 A. That is correct.

14 Q. But it would appear once
15 again, if the calculations are approximately correct,
16 that the sample was taken at the earliest reliable
17 time -- I'm sorry -- that the interval between death
18 and the time of the last dose of digoxin was some
19 six hours.

20 A. Yes.

21 Q. Then, Doctor, if we could
22 take an example of a case where there was a
23 lengthy period before death when digoxin appears to
24 have been withheld, there are a number of these, but
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2 if we could take a look at Case No. 10, for example,
3 that is the case you told us where there was
4 evidence of renal malfunction at the time of
5 death. In that case the last dose of digoxin was
6 given at 9 a.m. on July 27th, 1981.

7 A. Yes.

8 Q. The child died at 2 a.m. on
9 July 29th, 1981, Even by my rough calculation, that
10 is some 40 hours plus between the time of death
11 and the time of the last administration of digoxin.

12 A. Yes.

13 Q. In that case, once again, we
14 do have an ante-mortem level. That was taken the
15 day before death and it appears to have been 1.8
16 nanograms.

17 A. Yes.

18 Q. The post-mortem level in the
19 blood sample, however, was 11 nanograms.

20 A. Yes.

21 Q. So in that case, recognizing that
22 the antemortem digoxin level was a day before
23 death and we do not know what it was on the day of
24 death, but comparing those two numbers we have an
25 elevation factor of at least 6.

A. Yes.



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Q. In that case, Doctor, you told us that there was evidence, as you have indicated, of renal malfunction. In cases of that kind, Doctor, is it possible in your view that the difficulty being experienced by the patients in excretion ability could account for elevated levels?

A. I'm sorry, in which case?

Q. We are still talking about Case No. 10 where we have seen that the post mortem digoxin level was elevated some six times over the last known ante-mortem level, although there is a timing difficulty there.

A. I think that is probably an important factor, but there are probably multiple factors in a case like that.

Q. That is certainly one to which we have to address ourselves.

A. Yes.

Q. Doctor, if we could, dealing finally again with the case of Gary Murphy, and we have reviewed the assay results of the Centre for Forensic Science and we have heard evidence concerning the assay results of the Hospital for Sick Children, you have provided me, simply so that they are before the Commissioner, with a copy of the



11 1
2 Coroner's Warrant for Postmortem examination in
3 the case of Gary Murphy. I would ask you to look at
4 it and tell me if you can identify it as the Warrant
5 received by the Pathology Department.

6 A. Yes, it is.

7 MS. CRONK: Could that be marked as
8 the next exhibit?

9 Q. You have provided me as well
10 with a copy of the preliminary autopsy report on
11 Gary Murphy which I take it was prepared by Dr.
12 Smith.

13 A. Yes.

14 Q. Can you identify that as the
15 preliminary autopsy report?

16 A. Yes, it is.

17 Q. In this case, Doctor, we have
18 heard evidence from other witnesses that in some
19 instances in addition to the report of postmortem
20 examination that is prepared by the involved
21 pathologist for forwarding to the coroner's offices,
22 there is sometimes a Hospital for Sick Children
23 final autopsy report prepared, although that is
24 not the usual case. In this case was a Hospital
25 for Sick Children final autopsy report prepared
on Gary Murphy?



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A. As far as I know it was not.

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THE COMMISSIONER: The warrant will
be Exhibit 235 and the preliminary autopsy
report is Exhibit 236.

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---EXHIBIT NO. 235: Warrant for Post Mortem Examina-
tion re Gary Murphy.

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---EXHIBIT NO. 236: The Hospital for Sick Children
Preliminary Autopsy Report on
Gary Murphy.

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Q. Finally, Doctor, you have pro-
vided to me a copy of the report of postmortem
examination Gary Murphy. Is this the report that
was prepared by Dr. Smith and forwarded to the
Coroner's Office?

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A. Yes, it is.

16

THE COMMISSIONER: Sorry, that is
a coroner's document, is it?

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Q. Doctor, am I correct that this
is the report prepared by Dr. Smith and forwarded
to the coroner's offices at the conclusion of the
full autopsy on Gary Murphy?

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A. Yes, that is correct.

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THE COMMISSIONER: That will be
Exhibit 237.

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---EXHIBIT NO. 237: Report of Post Mortem Examina-
tion on Gary Murphy.

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Q. Doctor, we have examined a number of possible explanations for the elevated levels and one possible explanation which we have discussed is the attributing of death to digoxin intoxication amongst these children, and I wish to be clear. I believe you told us that in no case of the 37 was death attributed in the final analysis to digoxin intoxication either by the Hospital for Sick Children or by the coroner's office. Do I have that correct, insofar as you are aware?

A. Yes, that is correct.

Q. You see, however, Doctor, if we look at the preliminary autopsy report in the case of Gary Murphy that the possibility of digoxin toxicity as a contributing factor to this child's death was indeed one of the possible explanations that was considered and raised at the time the preliminary autopsy report was prepared.

A. Yes. This case is a special case, however.

Q. We see, Doctor, on the basis of the report at post-mortem examination that was completed in the case of Gary Murphy that the cause of death set out in Section 8 of the report, the second to last page, signed by Dr. Smith, indicates that in Dr. Smith's opinion the cause



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of death as at May 18th, 1983 was properly to be attributed to complex congenital heart disease and sequelae. Is that correct?

A. Yes, that is what he says.

Q. May we turn now then to the matter of the second study which I understand was conducted with the participation of the pathology department and your own personal involvement, as I understand it, and that has been referred to as the gutter blood study before this Commission.

We have heard, in evidence from other witnesses, that in the late summer and fall of 1982 a Summary was undertaken at the Hospital in conjunction with the Centre for Forensic Sciences for the purposes of determining if possible whether there is a discrepancy between gutter blood digoxin concentrations and digoxin concentrations in venous and arterial blood specimens. I take it you participated in the creation and carrying out of that study.

A. Yes, that is correct.

Q. Can you tell us what your role was in that study, Doctor?

A. Because one of the patients with high postmortem digoxin, the values obtained on a specimen other than blood, in fact, it was a



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sample of fluid in the pelvic gutter region of the cavity, I thought it would be useful to sample in other cases the fluid that accumulates in this area to see whether or not it would be higher or similar to the blood levels, with the hope of clarifying that issue.

Q. When you say that the gutter blood specimen had resulted in a high level, I take it you are referring to the case of Janice Estrella.

A. Yes, that is correct.

Q. Was it specifically with that case in mind and for the purposes you have outlined that the gutter blood study was undertaken?

A. Yes.

Q. Doctor, earlier this morning I asked you whether or not the gutter blood results which are set out in your computer printout are referable to cases that formed part of the gutter blood study, and you told me, certainly, that one was, and we will come to that, that is the one where the level was 169 nanograms on one gutter blood specimen and 17 nanograms on the second gutter blood specimen. We have seen that there were a number of gutter blood specimens tested prior to that case.

Have you been able now to determine



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now which if any of those formed part of the gutter
blood study?

A. Yes, on this sheet the cutoff
number is between 20 and 21. 20 was not part of
the study; 21 was.



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Q. And are all the gutter blood specimens and results thereafter reported in the printout results in cases that formed part of the gutter blood site?

A. Yes, that is correct.

Q. Can you tell me then, Doctor, in Case No. 17 where a result of 18 nanograms was obtained on a gutter blood specimen why a specimen from that site was chosen amongst others for digoxin assay?

A. Well, this is the very first one we did when it was thought useful to try and check this. So, we took samples from a number of sites, including the femoral veins in the same fashion as they were done previously, milking the leg veins, and also a sample from the so-called gutter fluid or body cavity fluid.

Q. And were specimens chosen from those particular sites, that is, the gutter blood site and the use of the femoral vein by milking a leg vein, were they done bearing in mind the sites that were involved in the taking of samples from Janice Estrella?

A. Yes, that is correct.

Q. Was that done for the purposes



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2 of a comparative test, if you would?

3 A. Yes.

4 Q. All right. And similarly,
5 Doctor, when we come to Case No. 19 we see that a
6 gutter blood specimen was taken in that case, although,
7 a femoral vein specimen was not. Can you help us as
8 to why that was done in that case?

9 A. I would have to check that but
10 I think this was a limited permission case. I think
11 it was not possible in that case to do that.

12 Q. Not possible to take a femoral
13 vein specimen?

14 A. No. I think it was either
15 heart or something of that sort.

16 Q. And was the gutter blood
17 specimen or the body fluid specimen in that case
18 taken as well having reference to the Estrella case
19 for the purposes of obtaining further information as
20 to what results might be achieved from gutter blood
21 specimens?

22 A. Yes.

23 Q. All right. I take it then
24 that the very next one that was taken involved the
25 development of the protocol with the Centre of
Forensic Sciences and the various case studies that



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were then conducted under the gutter blood study
itself.

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A. Yes.

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Q. All right. We have heard
from Dr. Mancer in earlier evidence concerning the
protocol which was established for the conduct of
this study. Did you personally participate in the
drawing up and the settling of the terms of the
protocol, Dr. Phillips?

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A. Well, I asked Dr. Mancer to
draw up a protocol, which he did, which is I am
sure the same one that you are talking about. I saw
this before it was finally accepted as being the
protocol we would use.

Q. Doctor, I am showing to you a
copy of Exhibit 202A and 202B. The evidence to date
before the Commissioner has been that Exhibit 202B
was the protocol which was ultimately used for the
purposes of the gutter blood study. Could you examine
the two exhibits and tell us whether or not that
accords with your understanding of the information?

A. I think this was the one.

Q. You are pointing to Exhibit 202B,
the top copy.

A. Where does it say that?



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Q. The top copy.

A. Yes.

Q. Doctor, you have provided me as well with a copy of a protocol dated September 7, 1982 which is entitled "All Autopsies on Digoxin Treated Patients (Until Further Notice) - To be done by Pathologist, not Resident. Revised - Following Discussion with Mr. Cimbura. Destroy Old Copy". There is a date on this one of September 7, 1982.

A. Yes.

Q. Can you help me, is this the protocol that was on further refinement ultimately used for the gutter blood study?

THE COMMISSIONER: Is it different from 202B?

MS. CRONK: It seems to be in one respect only, Mr. Commissioner, that references to gutter blood specimens have been deleted and references to body fluid specimens have been inserted but it bears a later date than we had understood Exhibit 202B to be.

THE WITNESS: Well, from a quick look I think they are the same. There may be some minor changes in this.

MS. CRONK: Q. Well, the document



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that I have just shown you bears the date of September 7th, 1982.

A. Yes.

Q. Am I correct, Doctor, that the references ---

THE COMMISSIONER: I'm sorry, was that September of December?

MS. CRONK: September 7th, 1982, sir.

Q. The references, for example, in paragraph 9 of the first section to gutter fluid, which appear in Exhibit 202B are in the September 7th protocol references to body fluid specimens. Do I have that correctly?

A. That is correct.

THE COMMISSIONER: All right, thank you, Doctor.

We will make that 202C.

---EXHIBIT NO. 202C: Protocol dated September 7, 1982.

MS. CRONK: Q. Doctor, other than the change of language from gutter fluid specimens to body fluid specimens, on my reading of the two documents there is no difference other than the change of language, is that correct?



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A. I think that is correct, yes.

Q. All right. Doctor, the evidence to date suggests that the protocol that was ultimately settled was designed to simulate insofar as possible the circumstances surrounding the taking of a gutter blood specimen for digoxin assay from the body of Janice Estrella which we have heard occurred in January of 1981. Was that the purpose, the intended purpose of the protocol as far as you were concerned?

A. Yes.

Q. All right. And prior to undertaking this particular study with the Centre of Forensic Sciences, had any study or review been undertaken internal to the Pathology Department at the Hospital for Sick Children other than in respect of the two particular cases that you have told us about to study digoxin level results on gutter blood specimens?

A. By the two you are referring to 17 and...

Q. And 19.

A. Yes.

Q. Other than those two cases had any studies or review been undertaken at the Hospital



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3 for Sick Children?

4 A. No. 18 as well I think.

5 Q. All right.

6 A. What happened was we did a
7 feel and in some of these cases I asked Mr. Cimbura
8 to double check the values and after we had done
9 that a few times he thought it was probably better
10 that we have a proper protocol and he would examine
11 them all. That is really what happened.

12 Q. The protocol that we have just
13 looked at dated September 7th then is the result of
14 those discussions and those first comparative tests?

15 A. Yes.

16 Q. All right. I take it, Doctor,
17 that in terms of the carrying out of the study itself
18 that when samples of sufficient quantity were
19 obtained from the sagittal sinus or the heart of
20 the involved patient then a quantity of that sample
21 was retained at the Hospital for Sick Children for
22 assay purposes but the rest of the sample went to the
23 Centre for testing?

24 A. Yes, I think that is correct.
25 The samples were taken mainly for the Centre, but
we sometimes kept some heart blood or some other
sample for testing in the Hospital.



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Q. And in due course, Dr. Phillips, did you receive from Mr. Cimbura a reporting letter concerning the results that had been achieved on all these various specimens?

A. I'm not sure I got them all. I got one letter from him with a considerable amount of information on it listing 10 or 12 of the cases, yes.

Q. Doctor, I am showing you a letter dated January 31, 1983 expressed to be from Mr. Cimbura to yourself at the Hospital for Sick Children to which is attached a document entitled "Protocol Results - Postmortem Blood Digoxin Results Expressed in Nanograms per Millilitre". Is this the letter and the results which you received from Mr. Cimbura?

A. Yes, that is correct.
THE COMMISSIONER: Exhibit 238.
MS. CRONK: Thank you.

---EXHIBIT NO. 238: Letter dated January 31, 1983 from Mr. Cimbura to Dr. Phillips with attached document entitled "Protocol Results - Postmortem Blood Digoxin Results Expressed in Nanograms per Millilitre".

MS. CRONK: Q. Doctor, if we could



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deal first with the results on page 2 of the letter. They appear to be set out in a format somewhat different from that we have seen before in previous exhibits, but I take it that the first column merely sets out sequentially the 14 cases that formed part of the study.

A. Yes.

Q. To the best of your knowledge, Doctor, were there 14 cases in total?

A. Yes.

Q. All right. And then the next column of information sets out the file number ascribed to each case at the Centre of Forensic Sciences.

A. No, that number is the Hospital number.

Q. All right.

A. The autopsy number.

Q. I'm sorry, the second column of information is entitled "CFS File Number".

A. Oh, I'm sorry, yes, that's right.

Q. And then the third column of information is, you have told us, the Hospital for Sick Children autopsy number.



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A. Yes, that's right.

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Q. And then the results on the heart specimen, the results on the sagittal sinus specimens and the results on the gutter blood specimens in two different categories are set out?

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A. Yes. The heart and sagittal sinus are also blood samples, it is not tissue.

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Q. And I take it, Doctor, having regard to what we have heard about the protocol that the results of the gutter Specimen No. 1 set out in that column reflect the results obtained on specimens drawn from the pelvic cavity at the start of the autopsy while the results set out in the gutter blood Specimen No. 2 column set out the results obtained on specimens drawn from three hours after the commencement of the autopsy. Do I have that correctly?

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A. Yes, with slight modification by start because there is some procedure you have to go through before you get to No. 1.

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Q. All right.

A. But it was standard in all cases and the same as in the Estrella case, that is to the best of our knowledge.

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Q. And I take it that the time



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3 interval between the taking of the two samples, as
4 we have seen from the protocol, was intended to be
5 approximately three hours?

6 A. Yes.

7 Q. All right. And we have seen -
8 well, perhaps we could turn to Mr. Cimbura's
9 covering letter first, Dr. Phillips, and to the
10 last sentence in the first paragraph which reads:

11 "With the exception of Case No. 5
12 (discussed previously) the gutter
13 blood concentrations do not exceed
14 the range of values found in post-
15 mortem blood of infants on digoxin
16 therapy."

17 When you received these results and
18 this letter from Mr. Cimbura, Dr. Phillips, when you
19 had had an opportunity to consider same, did you
20 share that conclusion or did you disagree?

21 A. No, I agreed with that.

22 Q. All right. And then if we
23 turn to Case No. 5 as reported in the results,
24 Doctor, we see that the result on the heart
25 specimen was 9.9 nanograms, the result on the
sagittal sinus blood specimen was 4.3 and we come
then to the result on the first gutter blood specimen



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2 of 169.6, which was reported as 17.7 on the second
3 gutter blood specimen and those are the results
4 contained on your printout for this particular case.

5 Do you, Doctor, as a pathologist, have
6 any explanation which you can offer to us for the
7 results which were achieved in Case No. 5 on the
8 two gutter blood specimens?

9 A. Well, Mr. Cimbura called me
10 on the telephone about this result. I can't tell
11 you the exact date of that call but he phoned me
12 shortly after he had this result and my first question
13 to him was whether it was a calculation error since
14 the two values looked similar aside from the decimal
15 point position. He assured me that it was not a
16 calculation error, that he repeated the values a
17 number of times and that the values were correct.
18 At that time of that phone call it was left very much
19 uncertain as to what that value meant. Some time
20 after that we held a meeting to discuss this case
21 and this value in particular. The meeting was
22 actually called by Dr. Ross Bennett and there were
23 four of us at the meeting: Dr. Bennett, Mr. Cimbura,
24 myself and Dr. Mancer. This meeting took place in
25 my office and lasted an hour to an hour and a half.
We went over the details of how these samples were



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3 obtained and what could this value possibly mean and
4 after discussing it extensively I think it would be
5 fair to say that we were all stumped by it and that
6 we couldn't really come up with an entirely satis-
7 factory explanation because the second sample is
8 taken from the same pool of fluid as the first one
9 and there hadn't been a great deal of dilution taking
place, it was about the same volume.

10 So, it became very hard to explain,
11 particularly the first value of 169. It was I
12 think certainly my conclusion that the most likely
13 explanation was that there was some contamination of
14 that sample probably by some particular material
15 from the bowel, which was not present in the second
one.

16 I think since this meeting was called
17 by Dr. Bennett I think probably his opinion is
18 probably very important in this issue too, but my
19 opinion, since you asked me, was that I couldn't
20 really explain these values, particularly that first
21 high one, the very high one, but thought it was
22 most likely from the contamination from some bowel
material.

23 Q. Doctor, were you personally
24 involved in the conduct of the autopsy on this
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patient when these specimens were taken or was it
someone else in your Department?

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A. I think it was somebody else.

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Q. All right.

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A. I can check that but I think
it was somebody else.

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Q. Do you have any information
available to you as to - well, I'm sorry, fairly,
would we be correct in assuming that the two gutter
blood specimens taken at autopsy from this patient
were taken in accordance with the steps outlined in
the protocol?

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A. Yes, they were taken exactly
the same way as the others that you see on this list.

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Q. And Doctor, we know from information contained on your printout on Exhibit 232, with respect to this case that this patient had first of all died on October 13th, 1982 at approximately 8:30 p.m. in the evening, and that the last known dose of digoxin to have been administered was earlier, much earlier that day at 1:30 a.m.; do I have that correctly?

A. Yes.

Q. We do not however have an ante-mortem digoxin level against which those gutter blood levels can be measured?

A. That is correct. We did however have the sagittal sinus sample of 4.3.

Q. That I take it was as well a postmortem sample, Doctor?

A. Yes. Most of us had come to accept the fact that under 5, is normal, at least we accept it as normal, and there has been a range in values, of course it is hard to interpret that, but usually if there is one that is below the range of normal it is thought most likely that probably the values are acceptable, at least this sort of working --

Q. Rule of thumb?

A. Rule that we have been using, yes.



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Q. When you say that most of you have come to accept a reading of under 5 as normal, were you referring only to samples taken from sagittal sinus, or to samples ---

A. Well, to blood specimens taken at autopsy in general. This opinion I think is - it is partly mine, it is partly from discussions with the Coroner's office. For instance they put a level of 5 as the cutoff, as the level at which they wanted to be called and I think that indicates a degree of concern about the value if it is less than 5 they don't want me to report it to them, so I will presume from the discussions with them that they are not concerned at values below 5, and in this case it is 4.3.

Q. I see. Doctor, we know, and of course you are aware that the gutter blood specimens drawn from the body of Janice Estrella resulted in a reading on postmortem assay conducted at the Hospital of 72 nanograms per millilitre. In light of the gutter blood study and the data which was provided to you as a result of the assays conducted on those 14 cases, how would you as a pathologist regard that level of 72 nanograms in the case of Janice Estrella?



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A. Well, it is a difficult question.

After considering it in considerable detail I thought that it probably served to muddy the issue a bit. Because I must say my own personal view was that a gutter sample was probably a reasonably accurate record, would probably be similar to the blood, I was actually surprised at these results here, that the gutter fluid specimens can be so different or whatever, that is the way I thought of it.

Q. I take it then, Doctor, that given a discrepancy, results of this kind did result in Case No. 5 in the gutter blood sample, that that data would now lead you to place somewhat less confidence in the reliability of the gutter blood specimen level obtained on Janice Estrella?

A. Yes, that is correct.

Q. Is it in your view a level which can be discounted entirely, given this data?

A. I don't think so, no. I don't think it can be completely discounted, because we don't really have a complete explanation for that case, or for this case.

In this case at least we have other controls which we can look at. So I don't really think there is anything seriously going on in this



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particular patient, or for instance, because this is why I mentioned the sagittal sinus of 4.3, I regard that with a high degree of confidence, because that is a very good sample.

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The gutter fluid ones I think - and this is why we did the study to see what they mean. I was surprised to get this value, I find it impossible to completely explain and it does raise some question in my mind about the significance of gutter fluid sample values.

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Q. Thank you, Doctor. Doctor, quite apart from the results reported in the gutter blood study, we know that in Case No. 17, which you have told us was the first case other than Janice Estrella I take it, in the Hospital, where a gutter blood specimen was tested for digoxin assay, there were two specimens from femoral vein tests as well for digoxin assay?

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A. Yes.

Q. Were those samples taken, to the best of your knowledge, insofar as it was possible in the same manner as had been the leg vein specimen in the case of Janice Estrella?

A. Yes. Before we started doing any of these I phoned Dr. Taylor in Vancouver and



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asked him how he took the samples in Estrella, so that we could draw up protocol, or even before the protocol, at least obtain samples in a manner similar to the way he took the Estrella case samples.

Now protocol in this case is not exactly the same procedure as he used, but we thought reasonably close, close enough to it that we thought would be meaningful.

Q. And I take it that as is disclosed by the printout, the results on those two specimens were 2.5 and 2.3 nanograms per millilitre?

A. Yes.

Q. Other than those two specimens from femoral veins, did you embark or undertake any study of leg vein specimens for digoxin assay other than the two that are recorded on the printout?

A. Yes. We took quite a few actually that were sent to Mr. Cimbura and he hasn't reported back on all of those.

Q. So you don't yet know the results of those specimens?

A. No.

Q. How many cases were involved in that regard, Doctor?

A. I have the data here, I would



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have to look to see, we were not always successful in obtaining it in that - there is quite a bit of variation at autopsy and whether you can get a blood sample or not and how much, and in some of these cases we just were not able to get any, or we may get one but not a second one, things of this sort.

Q. Perhaps we will have to hear in due course from others about that. If you can provide us through your counsel with the information as to how many specimens to the best of your knowledge were provided for that purpose it would be helpful.

A. Yes.

Q. Doctor, may we turn then to the third study which as I understand it was conducted by the Pathology Department with respect to the events with which we are concerned.

As I understand it, Doctor, you were not present in the Hospital, nor indeed in the city, on the weekend of March 20th, 1981, is that correct?

A. No, I left Toronto at noon on March the 20th and came back to the Hospital on March the 30th.

Q. I take it, Doctor, that on your return to the Hospital on March 30th, you were informed of the events which had taken place over



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the weekend of March 20th and the various deaths

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that had occurred?

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A. Yes.

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Q. Doctor, at that time, or

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subsequently, did the Pathology Department under

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your direction and instruction conduct a retrospective

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review of the autopsies which had been conducted on

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children who had died on Wards 4A/B during the period

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of time that we are concerned with, that is July of

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1980 through to the end of March 1981?

A. Yes, we did.

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Q. When was that study undertaken?

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A. Well, there are a number of

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things we did. I think the specific study that you

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are asking about we did in July of 1982, but before

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that, long before that, I checked all the slides and

all the cases, for instance, myself.

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Q. You personally reviewed the

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slides on all of the cases where autopsies had been

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performed?

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A. Yes. I didn't review all the

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charts, but I looked at all the slides; and also in

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this connection when I came back I wasn't sure what

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exactly we should be doing now, or at that time,

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that was different from what we were doing before,

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because it was very startling news to me that some of these babies had met deaths untimely, and that I wanted to be sure that we were not going to miss anything further; and I actually phoned up Dr. Tepperman, who I had had many discussions with at this time, to ask him what we should be doing differently, and aside from doing postmortem digoxins in all cases which is what was instituted at that time, he said nothing specific in terms of - that he could think of, or in fact that I could think of, that we could do that was different.

Q. I take it though that at some point you did determine it advisable, or useful, to undertake a retrospective review of the autopsies which in fact had been conducted?

A. Yes. Well, what I was thinking of was prospective, but certainly in retrospect we looked back at all the cases. After looking at them myself I thought it would be useful for our department to review them as a group, and I asked the various pathologists who had conducted the cases of concern, because by this time I think they were 46 as I remember correctly being considered, as possible suspect cases. We didn't have autopsies on all of those, but we had autopsies on quite a lot of them



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and thought we should review all of those cases.

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Q. Can I stop you there just for a moment, Doctor?

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A. Yes.

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Q. Other than yourself, what other pathologists from your Pathology Department were involved in this review?

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A. It was Dr. Mancer, Dr. Becker, Dr. Cutz and myself.

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Q. And what was the purpose of the review as you intended it and understood it at the time that the study was undertaken?

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A. I wanted to see whether or not in retrospect looking over the pathology if we had made the reports differently, or if we had missed anything that we could see pathologically that wasn't reported in the reports that we had issued.

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Q. And was the review then intended to encompass those cases where there had been deaths on Wards 4A/B during that nine-month time frame, and where autopsies had been conducted?

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A. Yes, that is correct.

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Q. So I take it then that the study was confined to an examination of those cases where there had been deaths on either of those two wards,



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and where an autopsy had been directed either as a result of the involvement of the Coroner's offices or as a result of parental consent?

A. Yes.

Q. Did you then, Doctor, at the conclusion of that review process prepare a report outlining the conclusions and the results of the study as you understood them to be?

A. Yes.

Q. Doctor, I am showing you a document entitled: "Retrospective Review of Heart Deaths (June 1980 - March '81) by Pathology Department".

On the last page of it the indication is contained, it was compiled by you, and it is dated July 14th, 1982. Is that the report that was prepared as a result of this retrospective review?

A. Yes, it is.

MS. CRONK: May that be the next exhibit please, Mr. Commissioner?

THE COMMISSIONER: Exhibit 239.

--- EXHIBIT NO. 239: Document entitled:
"Retrospective Review of Heart Deaths (June 1980 - March '81) by Pathology Department".

MS. CRONK: Q. Doctor, we see in the second indented paragraph of the report an indication



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that 31 of 46 - I am sorry, I should back-up; the
first information contained in the report is:

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"46 cardiac patients (mainly 4A, 4B)
have been designated as suspect by
the police.

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"31/46 had autopsies done at The
Hospital for Sick Children, these
patients are shown on the attached
list."

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You then indicate:

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"Only the first 29 patients on the
list can be evaluated objectively
since after that the high digoxin
levels were known."

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Can you help me, Doctor, as to which
two cases were not, or did not form part of this
review study?

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A. Yes, the only two really that
we didn't look at was Miller and Cook.

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Q. And that was why, Doctor?

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A. Well, I think in the Miller and
Cook instances the pathology reports actually stated
something to the effect of digoxin toxicity as being
a factor, or a possible factor, or the factor, we
would have to look to see exactly what, but it was

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mentioned in the Pathology Report. The others did not, as far as I know, contain any explicit mention of digoxin.

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Q. Perhaps we can come back to that in a moment then, Doctor.

The next paragraph appears to set out at least one of the overall results that were achieved at the completion of the study and indicates that of the 29 cases that were in fact reviewed a completely satisfactory anatomic cause of death was found in 25. Of the remaining four three were medico-legal cases and were investigated at the time by the coroner, and you set out the autopsy numbers for these cases, and the names of the patients involved, and they are Dawson, Pacsai, Velasquez, and the remaining patient was Hines.

A. That is correct.

Q. To stop there for a moment, then, Doctor, I take it that as a result of this cooperative review that was undertaken by yourself and your associates you were of the conclusion that in the 29 cases there was an anatomic cause of death evident at autopsy which accounted for the deaths of the particular patients involved in 25 of the 29 cases. Do I have that correctly?

A. That is correct.

Q. In four cases that did not appear to be the case, and they are Dawson, Pacsai



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2 Velasquez, and Hines.

3 Do I have that correctly?

4 A. In those cases I do not know
5 if that remark is quite correct. There were four
6 which we separated out that we thought really needed
7 looking at further. The others, from our perspective,
8 at least, were quite clear, and there were four cited
9 where either the report indicated that we could not
10 tell exactly or there was some question about it
11 in our minds.

12 Q. Dealing just now with those
13 four cases, on the basis of the review that was
14 conducted by the reviewing team, was there in any
15 of those four cases what could be described as you
16 described it in respect to the other 25 cases, a
17 completely satisfactory anatomic cause of death?

18 A. In these other four?

19 Q. Yes.

20 A. I would have to look at the
21 specific reports to recall, but I think there was
22 some question about fully explaining the death in
23 the case of Dawson and in Pacsai; and in Velasquez
24 there had been a question of drug overdose but a
25 different drug than digoxin.

Q. Perhaps we could deal with



1
2 each of those in turn, Doctor, because as I under-
3 stand it, the conclusions and observations of the
4 reviewing team with respect to those four children
5 are set out in the balance of the report in some
6 detail. There appear as well to be observations
7 and comments with respect to the case of Janice
8 Estrella and Kristin Inwood set out in addition to
9 those four. Can you help me as to why they were
included for more detailed treatment?

10 A. Yes. By the time we did this
11 review, in the case of Estrella, the high value of
12 72 was well known --it certainly had not been known
13 to me at least up until certainly after the time of
14 April, or the end of March, 1981. In Inwood also
there was a high digoxin on that case as well.

15 Q. I take it it was in light of
16 the postmortem digoxin levels on these two patients
17 that they were included for more specific treatment.

18 A. That is right.

19 Q. If we turn to Page 2, Doctor, do
20 we find there the conclusions of the reviewing
21 team with respect to Amber Dawson?

22 A. Yes. I should say that I wrote
23 this report and this was my understanding of the
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2 consensus of opinion, it was certainly mine, and I
3 thought it was the consensus of the group.

4 The way we did it was each person
5 reviewed their own cases and this report is sort
6 of just a summary of the discussions that we had
and the conclusions we came to, in my words.

7 Q. After each individual patholo-
8 gist had reviewed the particular cases in which
9 he had been involved, I take it that you met as
10 a group and reviewed them?

11 A. Yes, that is right.

12 Q. You then prepared this report
13 as a synopsis of what you perceived to be the
conclusions of the group as a whole?

14 A. Yes.

15 Q. In respect of Amber Dawson,
16 Doctor, in the last sentence of the paragraph
17 which is devoted to that case there is an indication
18 by way of summary:

19 "...there was significant pathology
20 but no specific immediate cause of
21 death was found anatomically. This
22 does not exclude possible patho-
23 physiological events such as aspira-
24 tion with suction causing reflex
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cardiac arrest, etc."

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As far as you were aware, Doctor,
I take it that was the consensus of opinion with
respect to Amber Dawson at the end of the review.

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A. Yes.

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Q. Dealing then with the case of
Kevin Pacsai, there is an indication first that
there was no anatomic cause of death with respect
to Kevin Pacsai.

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A. Yes, that is right.

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Q. And further on in the paragraph
you indicate:

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"This is presumably a biochemical
death, rather than one with an
anatomic cause."

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Can you help me, Doctor, as to what
you meant by that observation?

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A. In pathology, conventional
pathology, the way we practice it, we deal mainly
with morphological and anatomical abnormalities,
changes in tissues that we can see either grossly
or through a microscope. But it is well known that
there are metabolic and biochemical changes that
take place which we cannot see, using the methods
that we use; and biochemical changes, for instance,



1
2 potassium you cannot see under a microscope
3 and if the potassium level is high or low it would
4 be usually not possible to detect that. This type
5 of thing is what we are referring to here.

6 Q. Doctor, we know that in the
7 final autopsy report prepared with respect to Kevin
8 Pacsai which has been filed as Exhibit 106-A in these
9 proceedings, the concluding paragraph, under
10 Pathological Discussion, and perhaps I will just
11 read it to you, I am sure you are most familiar
12 with it, says:

13 "The immediate cause of death is
14 digitalis toxicity. Post mortem
15 blood level detected was 26 nanograms
16 per millilitre."

17 Can you help, me, Doctor, was it the
18 consensus of the review committee at the time that this
19 death and the autopsy was again reviewed, that this
20 was the immediate cause of death?

21 A. I am not actually certain of
22 this. We considered a number of things, dig.
23 toxicity obviously. We actually tried to consider
24 it objectively as if we did not know about the dig.
25 toxicity. This is perhaps a funny way to look at it
in the light of everything but we were looking at it



1
2 from the same perspectives that we looked at the
3 other cases and we did not think we could explain
4 this death on the basis of the anatomical lesions.
5 We looked for sepsis, for instance, and if a
6 conduction defect was a factor or a possible factor
7 in this case. Potassium levels were abnormal in
8 this patient and this was also a consideration.
9 Of course, subsequently, the digoxin values which
10 were known were a factor.

11 I think probably at that time this
12 was the way that we regarded it and certainly Dr.
13 Cutz who did this case talked about the dig.
14 toxicity and in light of that, as I stated further
15 on in this document, none of these cases would ex-
16 clude the possibility of dig. toxicity. If you know
17 you have a high value by some other means other than
18 conventional pathology, that would be something else
19 that would have to be taken into account.

20 If you look at it just from the
21 pathology -- conventional hospital pathology per
22 se -- where you could not see that, we were left
23 thinking that this was not an anatomic death that we
24 could explain, but a biochemical one.

25 Q. On the basis of the results
of the review that had been undertaken first by Dr.



1
2 Cutz of the case, because he had done the original
3 autopsy, or supervised it, we have heard, and then
4 the discussion which ensued amongst those others
5 of you involved in the process, was it felt in
6 retrospect that at the time you were conducting
7 this retrospective review that anything different
8 would have been included in the final autopsy report
9 than had been included at the time it was prepared?

10 A. No. We did not, if I understand
11 your question correctly, we felt, having done this
12 review, that we would have made up the reports just
13 the same way in which they were made up. We would
14 not have really changed anything significantly in
15 any event.

16 Q. That was the conclusion, I
17 take it, over all with respect to the 29 cases?

18 A. Yes.

19 Q. Including Kevin Pacsai?

20 A. Yes.

21 MS. CRONK: Mr. Commissioner, it is
22 my intention to go through the others that are
23 dealt with in detail. Would this be a good time to
24 take a break?

25 THE COMMISSIONER: Yes, until 2:30.

---Luncheon recess.



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2 ---Upon resuming after the luncheon recess.

3 THE COMMISSIONER: Yes, Ms. Cronk?

4 MS. CRONK: Thank you, sir.

5 Q. Dr. Phillips, before we broke
6 for lunch we were discussing the report that you
7 prepared concerning the retrospective review con-
8 ducted in the Pathology Department of these deaths
9 and, more specifically, we were discussing the case
10 of Kevin Pacsai and the results which were included
11 in your report concerning that child.

12 At page 4 of your report,
13 Doctor, it is indicated that Kevin Pacsai is a
14 special case in pathology. I wonder if you can
15 help me as to why that was considered by you to
16 be the case.

17 A. Well, it was a special case
18 in this context because this was the case when
19 Dr. Cutz got the post mortem digoxin value back,
20 that was high. Thinking about it himself, he went
21 down to consult with Dr. Mancer to see if he could
22 have any possible explanation in his experience
23 as to what this value might mean and it was at
24 that time, and it was on the 20th of March in the
25 late afternoon. During this discussion Dr. Mancer



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recalled having similar high digoxin on the Estrella case, so that was why it was very special in that respect.

Q. Special, I take it, because it triggered first a discussion between Dr. Cutz and Dr. Mancer concerning the post mortem digoxin level and special as well because it served as the event which caused Dr. Mancer to recall the levels which had been found in Janice Estrella.

A. Yes.

Q. All right. At Page 5 of the report there is again mention made of the Kevin Pacsai case, and I will come to the general conclusions contained in the report in a few moments, but for the moment there is an indication with respect to Pacsai that the deaths could have been considered a biochemical death. Now, if you relate that to the earlier comment made in the report, Dr. Phillips, that there was no anatomic cause of death, can you help me as to what you were referring when you suggested that the cause of death as taken by the review group was considered to be potentially a biochemical death?

A. Yes. This term is used in pathology for those cases where, using ordinary



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2 pathology criteria we don't have a satisfactory
3 explanation for the deaths. Some of these, in fact,
4 all the ones up until this case virtually that I have
5 seen have been cases where there has been a metabolic
6 defect and the elevation in the blood of some
7 material that is normally metabolized but accumulates
8 to very high levels in association with usually
9 enzyme defects and things of this sort. These
10 types of things give what we call biochemical deaths
and not morphological deaths, that type of thing.

11 Q. I take it, however, that
12 the accumulation of metabolites in the body through
13 some enzyme reaction of one kind or another was
14 not thought to be the cause of death of Kevin
Pacsai.

15 A. No. You see, we tried to do this
16 objectively not thinking about digoxin but of
17 course it was impossible to do that, particularly in
18 a case like this where we didn't really find any-
19 thing else.

20 Q. Well, leaving aside then the
21 digoxin levels which were reported both ante mortem
22 and post mortem on Kevin Pacsai, I take it that it
23 was the consensus then that there were not patho-
24 logical findings which could be satisfactorily
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accepted as having accounted for the child's
death.

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A. That's right.

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Q. All right. The next case, then,
that is dealt with in the report, Doctor, is that
of Antonio Velasquez. Your conclusions with respect
to that case are set out on the top of Page 3 of
your report. Perhaps it is sufficient merely
to refer to the last two sentences in which you
indicated that,

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"It was concluded in retrospect that
there was sufficient pathology to
explain the deaths. Digoxin toxicity
still is a possible factor, however,
but digoxin had neither been known to
have been given nor was toxicologically
requested."

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And I take it that the Velasquez
case was yet another, as were all of these, you
have told us, where the possibility of a fatal
digoxin overdose could no be ruled out on the
basis only of pathological findings.

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A. Yes, that's right. This case
was one of Dr. Mancer's. It was a medical-legal
case. He thought the cause of death was undetermined,



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2 the actual final cause of death. The pathology
3 on that case, actually, there were a lot of findings
4 pathologically which under most circumstances I think
5 would have been acceptable as to explain the death.
6 There were other circumstances in this case in that,
7 if I remember it correctly, the patient died either
8 during or right after the administration of the drug.

8 Q. Yes.

9 A. And that this was cause for
10 concern in this case.

11 Q. All right.

12 A. So, that entered into the
13 possibility that some connection with the drug may
14 have been a factor in this case and I think that is
15 the reason it was signed out by Dr. Mancer the way
16 he did. But I recall asking him when he reviewed
17 the pathology in this case if he just took the
18 pathology objectively and looked at it, wouldn't
19 this be enough. And I think -- I'm not sure I can
20 speak for him specifically, but for most of it
21 probably it would have been. That was the sort
22 of thinking.

23 Q. May we turn, then, Doctor,
24 to the next case, that of Jordan Hines. The first
25 observation or comment which is included in your



1
2 report with respect to this child is that there
3 was no specific anatomic cause of death, that the
4 findings were considered fully compatible with
5 sudden infant death syndrome by Dr. Becker.
6 Stopping there for a moment, we have heard evidence
7 from, as you know, Dr. Becker and others concerning
8 the pathological indicators of sudden infant
9 death syndrome and what has been referred to in
10 these proceedings as missed SIDS. Was it the
11 consensus of those who participated in this review
12 in looking at the case of Jordan Hines that the
13 pathological indicators were those consistent with
14 sudden infant death syndrome or, alternatively,
15 missed sudden infant death syndrome?

16 A. Yes. It is hard for me to
17 speak for everybody, but as I recall the discussion
18 we had, Dr. Becker was asked to speak to this case
19 because it was his case and also because he is
20 our authority on the pathology of SIDS and it was
21 his perception of this case that the findings were
22 compatible with that.

23 The problem with SIDS, of course,
24 is that the anatomic findings tend to be very
25 minimal but the final result is certainly my
interpretation and I think Dr. Becker's because I



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accepted Dr. Becker's case as what we said here.

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Q. Doctor, over the years have you had personal experience in conducting autopsies where at the conclusion of the autopsy it was determined or thought on the basis of the evidence available that death was attributable to sudden infant death syndrome?

A. I'm sorry, could you repeat the question?

Q. Over the years have you personally had experience with cases where, at the conclusion of the autopsy, it was determined that death was attributable to sudden infant death syndrome?

A. Yes.

Q. All right. There is particular mention, or at least mention made in the comments set out with respect to Jordan Hines that the patient also had an arrhythmia.

A. Yes.

Q. And we have spoken earlier in the report about the pathology findings being considered fully compatible with SIDS by Dr. Becker.

A. Yes.

Q. And in your view, was the history of arrhythmia in the case of Jordan Hines as



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well fully compatible with SIDS?

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THE COMMISSIONER: Doctor, will you wait just one moment, please.

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MR. ROLAND: Mr. Commissioner, the witness has said he got this entirely from Dr. Becker. We have heard from Dr. Becker.

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THE COMMISSIONER: I agree.

MR. ROLAND: I don't think it is very useful to us. Certainly that wasn't the question my friend asked but the response goes to simply give what we have already heard from Dr. Becker.



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MS. CRONK: Yes, I don't disagree
with that.

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THE COMMISSIONER: Oh, Mr. Tobias
does.

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MR. TOBIAS: My only comment is, Mr.
Commissioner, that to the extent that it is obviously
second hand, I would have to agree with my friend,
Mr. Roland. However, at the time that Dr. Becker
gave his evidence he did not have the benefit of
having this particular study put to him. So, to that
extent, since that study wasn't put to him it might
be useful to hear through this witness what he said
only so that we can determine whether or not it might
be sensible and necessary to call him back.

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MR. ROLAND: Well, to respond to that.
Mr. Commissioner, my friend, I think, misconceives
this study. This study is Dr. Becker's view, which
we have already heard.

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THE COMMISSIONER: That's right.

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MR. ROLAND: I mean, there is nothing
independent of Dr. Becker here in this study or in
this document.

THE COMMISSIONER: No, I don't find
anything new in it. That doesn't mean if you think
it is important you can't follow it up, but if I can



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discourage Ms. Cronk from pursuing further with
this matter, I will do so.

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MS. CRONK: Mr. Commissioner, I
obviously agree entirely with what Mr. Roland is
saying, given the answer that Dr. Phillips has
provided.

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I would, however, like to be clear
and given Dr. Phillips' own perspective in these
cases that, Dr. Phillips, you have told us that
you personally reviewed these slides in all of
these cases.

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A. Yes.

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Q. I take it that included that of
Jordan Hines.

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A. Yes.

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Q. And this may be a matter in
respect of which you did not apply any independent
judgment and relied fully upon Dr. Becker; if that
is the case I will leave the matter there, but my
question to you was whether, based on your own
personal experience did you consider -- if that
wasn't my question it now is -- did you consider
the fact that this child had experienced arrhythmias
at the time of death to be fully compatible with
sudden infant death syndrome or did you have any



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concerns in that respect, personally?

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A. Well, I accepted Dr. Becker's
view that this was a missed SIDS and in missed
SIDS you may get an arrhythmia.

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Q. Fine, thank you.

THE COMMISSIONER: I want to say again,
Ms. Cronk, that I know that historical opinions may
well be interesting. I am far more interested myself
in the present view than I am in the view at the time
this thing was written.

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MS. CRONK: I understand, sir, and I
intend to leave the matter there.

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Q. Dr. Phillips, the next case that
is dealt with in the case of the report of course
is that of Kristin Inwood. Once again, the indication
is made that the review group felt that in that case
there was significant pathology which would explain
the deaths. There is an indication that the dis-
cussion in the pathology report is academic and I
confess merely to some confusion as to the
intended meaning of that language and perhaps you
can just clarify that for me. What did you mean
when you said the discussion in the pathology
report is academic?

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A. Well, in this case, and if you



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Phillips, dr. ex.
(Cronk)

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want me to go into specifics, I would like to review
some of them which I have here, but essentially in
this case there is some question as to whether the
pathology findings explain the death or not.

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When you read the pathology report that Dr. Cutz I believe signed, final report, I think this is evident.

When I looked at this case myself I thought that there was enough findings to explain the death, and in the discussions that we had at the time, at least as I understood it, Dr. Cutz agreed with me, so the explanation for the discussion that he wrote is academic. By that is meant, and I think it has probably been brought out here already. In these reports as they were done at that time we were not suspicious or suspecting anything. And in hospital pathology reports as done in teaching hospitals, it is not unusual to not necessarily even go into the cause of death in the pathology report, but we would list the causes, often there may be several possible explanations for death. So that we may not specifically pinpoint this. I think in my own practice I usually do, but this isn't necessarily so by everybody.

Secondly, within an academic setting, we tend to pick out some aspect, or some group of aspects of the case and discuss them perhaps in detail, which may be completely out of perspective, for instance, a medical/legal report, which is done



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2 from an entirely different point of view.

3 So I thought after discussing this
4 case with Dr. Cutz, and I think he thought that some
5 of the discussion in the path report, in the clinical
6 path summary for instance, this part of it was
7 "academic", in the sense that it didn't really
8 address specifically some of the points in such a
9 focused way as one might in a medical/legal report,
10 this is what I meant.

11 Q. I take it then, Doctor, that
12 in your opinion at the conclusion of the review of
13 this child's case, you were of the opinion that there
14 were sufficient anatomical or pathological findings
evident on autopsy to account for the child's death?

15 A. Yes.

16 Q. We come then, Doctor, to the
17 case of Janice Estrella. You indicate in the
18 comments with respect to that child that there were
19 anatomical findings evident at autopsy which could
20 account for this death, but for the postmortem
21 digoxin value of 72, you have expressed your view
22 earlier today as to the significance that should be
attached to that level.

23 This report I take it was prepared at
24 a time before the results of the gutter blood study
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2 had been made available.

3 A. That is correct.

4 Q. And I take it then, Doctor,
5 that when you indicate in this report that the level
6 of 72, the value of 72 must be considered to be
7 significant in light of the data that was subsequently
8 made available to you from the gutter blood study,
9 that is a view that you continue to hold today
10 although you place, as you told us this morning,
11 somewhat less confidence on the reliability of that
12 value having regard to the data that came forward as
13 a result of the gutter blood sample, do I take that
correctly?

14 A. Well, that is a very long
15 remark. I would say in answer to it I can't give a
16 blanket yes to all of that, but I would say that
17 the time that I learned of this value I thought it
18 was significant, at the time I wrote this report I
thought it was significant.

19 You are asking me now what I think it
20 is, I still think it most likely is, but I'm not sure
21 because that one sample that we discussed this morning,
22 the 169 might ease the issue a bit, so exactly what
23 this means now I am not nearly so certain about it
24 as I was before that.
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Q. I understand, Doctor, thank you.

Doctor, there is an indication as well in the report which you prepared of this study, that a review of some 29 other cases was undertaken for comparative purposes, and you deal with that on page 5 of your report and it appears:

"...a similar group of 29 consecutive autopsies on patients dying with severe congenital heart disease..."

Review of that was undertaken. Can you help me as to why that was done?

A. Yes. I did this-essentially what we did in all the studies we reviewed all the slides and all of the pathology reports to see how accurate they were and whether or not they really reflected the pathological findings.

As I said in suspect cases that was true. I thought it would be valuable to look at another group of cases from some previous year which was not under suspicion, and in particular I was looking to see whether or not there was any effects that for instance digoxin toxicity per se might produce microscopically, or in particular that might be detected from looking at quite a large series of other cases from the different period where



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2 there was no suspicion of digoxin overdose.

3 Q. And do I correctly take it
4 that your conclusion following that comparative
5 review was that the pathological findings in that
6 other group of 29 cases did not differ in any material
7 way from the pathological findings in the 29 cases
8 of which we are concerned?

9 A. Yes, that is exactly true.

10 Q. And I take it the only material
11 difference then arises when we come to look at the
12 digoxin levels themselves on this group of children?

13 A. Yes.

14 Q. Doctor, as well, in a summary
15 fashion you have set out the conclusions of the
16 review group in the remaining pages of the report.
17 You indicate on page 5 under the summary section:

18 "Using conventional pathology criteria,
19 an adequate cause of death was found
20 at post mortem in 25 of the 29 cases
21 that could be objectively reviewed.
22 Of the remaining four, Dawson, Pacsai
23 and Velasquez were Coroner's cases
24 and came under his perview as well as
25 ours. There was significant pathology
in Velasquez and Dawson. This leaves



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"two cases without obvious anatomic
findings: Pacsai and Hines."

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And then you go on to refer to Pacsai and Hines and

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I have drawn your attention to those remarks previously.

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You indicate:

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"We now know we must suspect digoxin

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toxicity in a number of these cases

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but from the pathology results this

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was not apparent at the time of the

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sign-out of the autopsy reports,

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except in the case of Kevin Pacsai."

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If we continue on with your conclusions,

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Doctor, I take it that in your view at that time and

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now the results of the pathology findings must be

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interpreted in the context of two separate factors:

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first on the list set out at the bottom of page 5

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and that is:

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"Firstly, there are always a lot of

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heart deaths seen each year in

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pathology. A year by year and month

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by month review of the heart autopsies

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has been made going back to 1976; it

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shows no unique trend over the period

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under investigation."

Doctor, you provided to me what I understand to be a



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3 summary of the autopsy cases that you are there
4 referring to in your report, undertaken since 1975
5 as opposed to 1976, is that the summary which you
6 prepared of the autopsies conducted during that
time period?

7 A. Yes, that is correct.

8 MS. CRONK: Mr. Commissioner, could
9 this be the next exhibit, please?

10 THE COMMISSIONER: I am sorry, the
11 top of it is 1975 to 1982, is it?

12 MS. CRONK: That's right.

13 Q. Doctor, so we can properly
14 entitle it, I take this refers to the autopsy
statistics in the Hospital for 1975 through to 1982?

15 A. Well, this is Pathology
16 Department autopsy statistics on heart deaths.

17 ---EXHIBIT NO. 240: Pathology Department Autopsy
18 Statistics on Heart Deaths,
1975-1982.

19 MS. CRONK: Q. Heart deaths over
20 those years?

21 A. At the Hospital for Sick
22 Children.

23 Q. And Doctor, if we review the
24 figures which are reflected on this summary, I take
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2 it first that they pertain obviously only to autopsies
3 conducted in the Pathology Department at the Hospital,
4 but that they would be autopsies on heart patients
5 from all over the Hospital, do I have that correctly?

6 A. Yes, that is correct.

7 Q. So regardless of the ward
8 upon which the patient died, if it was a heart
9 patient death and an autopsy was to be conducted
10 then that autopsy would be reflected in the
11 statistics?

12 A. Yes.

13 Q. And Doctor, secondly then,
14 inasmuch as the figures refer only to autopsies, I
15 take it we would be inaccurate if we viewed this
16 as a representative list of the number of deaths on
17 the wards that are dealt with in the list, rather
18 it is only those deaths in respect of which autopsies
19 were conducted, do I have that correctly?

20 A. Yes, that is right, there are
21 two important variables here. I think one is that
22 the number of autopsies in any month would obviously
23 vary with the autopsy consent rate. In the cases
24 that we are looking at here that varies from less
25 than 50 per cent in some months to 100 per cent in
other months.



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Q. So in some instances it would be an accurate representation of mortality on the given ward, but in other instances it would not be?

A. That is correct. Also these are heart cases seen at autopsy as we would see the case in the Pathology Department, and this may be different from what is seen clinically in that some of these patients may or may not have been suspected of having heart disease clinically.

Q. During life?

A. During life.

Q. But at autopsy were found to?

A. Yes.



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Q. And Doctor, if you review those

numbers, there are a number of observations perhaps one can make, simply looking at the numbers themselves, and that is that the results appear to indicate that there are a consistently high number of autopsies during these years in respect of deaths on the ICU and on Ward 7F/G?

A. Yes.

Q. Throughout the years 1975 right through to 1982?

A. Right.

Q. As I read the figures as well, it would appear that there was a much higher number of autopsies in respect of patients on Wards 4A/B in 1980 than in any other previous year?

A. Yes.

Q. And the only autopsies conducted on patients from Wards 4A and 4B in 1981 were during the first three months, January through March of 1981?

A. Pardon me?

Q. The only autopsies conducted on Wards 4A and 4B patients were during the first three months of 1981?

A. Yes.

Q. Doctor, when we take a look at



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the number of total autopsies in any given year,
however, would I be correct in interpreting these
numbers to indicate that the autopsies in 1980 and
1981 were not up over previous years, they were
higher, for example, in 1976?

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A. Yes.

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Q. They were the same as in 1975,
although they were higher than the total number of
autopsies in 1978 and in 1979?

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A. Yes.

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Q. Doctor, in addition to the
factors to which you referred in your report
concerning the number of heart deaths and the number
of heart case autopsies conducted, you indicate as
well that the pathology findings on all of these
children should be viewed in the context of the fact
that there is nothing specific about the pathology
of digitalis toxicity. That is an observation that
you make in the second to last page of your report.

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A. Yes.

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Q. And you indicate as well that
digitalis toxicity cannot be diagnosed using
conventional pathology methods?

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A. That is correct.



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Q. I take it by that you meant that only in circumstances where toxicology studies are undertaken can one derive the type of data that might permit a pathologist to look to digoxin toxicity as a determinant cause of death?

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A. That is correct.

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Q. Doctor, we have heard, in recent evidence, of the possibility of toxicity from propylene glycol in a number of these children. Can you help me, to the best of your knowledge is there anything sepcific about the pathology of toxicity from propylene glycol?

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A. There is not a great deal in the literature that I know of on the toxicity pathologically of propylene glycol but the type of changes it gives, if it is given by, say, a direct push in a large dose at a sudden time, a short time, you would not find anything, not pathologically; clinically, you probably would, but not pathologically.

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Now, if it was given over many days slowly, I think you might find changes perhaps in the kidney in some of those cases where you may find



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what we would call vacuole changes in the renal tubular cells. Aside from that, I don't think there are any findings.

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Q. I take it then, Doctor, that with respect to that drug, like digoxin in the absence of toxicology studies or tests being undertaken, it would be difficult for a pathologist to attribute death to the toxic effects of that drug?

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A. Well, the vacuole changes we would have noticed if they had been there and we did not find that, but that is all we would have to go on. We would not have any acute findings to look for.

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Q. Doctor, then dealing with your final conclusion with respect to this review that is set out on the last page of your report, you indicate:

"Finally, the bottom line in all these cases must be the toxicology results. It is obvious that a patient can have severe pathology sufficient to cause death, but still have died from a drug overdose. It is not possible to exclude homicide in any of these cases from the pathology findings, nor is it possible to diagnose it. Hence, even though in



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"retrospect the pathology findings in these patients still remains essentially unchanged from the way in which they were originally reported, the subsequent finding of lethal levels of digoxin must be an over-riding factor in those cases."

Doctor, you have told us that you personally undertook a review of the microscopic slides in each of these 29 cases. Do I have that correctly?

A. Yes.

Q. Did that include, although I recognize that the cases did not form part of the study, did it include as well a review by you of the slides on Allana Miller and Justin Cook?

A. I don't think I ever looked at those two, as a matter of fact.

Q. In addition to reviewing the slides then, on the 29 children, did you as well have occasion to review the final autopsy reports that had been prepared in respect to those deaths, on those 29 cases?

A. Actually I can correct that because I did in fact look at Miller and Cook and



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the reason I remember that is that the slides on four cases, Miller, Cook, Pacsai and Estrella, I think were the four I was asked to send to Dr. Hillsdon-Smith at the Medical Examiners' building in the Centre for Forensic Sciences again. So I looked at those slides again before sending them to him, the original slides, to make sure that I had the right ones and also to see how they matched the findings as in the other cases. So that was done.

Q. So you looked then at the slides in all 31 of those cases?

A. That is right.

Q. Did you in respect first to the group of 29 that were reviewed in detail have occasion to review the actual autopsy reports personally in those cases?

A. Yes, I did.

Q. Did you as well review the autopsy reports on Allana Miller and Justin Cook?

A. Yes.

Q. In respect of any of those cases, Doctor, on the basis of the study which you did conduct and the review that you undertook, would you have reached a conclusion different in any material respect than those set out in the final autopsy reports?



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A. Is this in 1982 now you are asking me - what I thought then?

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Q. Yes.

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A. No. I think that with very minor exceptions I would have reported them all the same.

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Q. Doctor, I am compelled to ask you then your opinion today on the basis of the review which you did undertake last year, would you have reached, knowing what you do today, a conclusion different in respect of any of those cases than is recorded in the final autopsy reports?

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THE COMMISSIONER: I am having some trouble with that question. Are you asking what his opinion is today?

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MS. CRONK: Yes, sir. Perhaps I did not put it clearly.

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THE COMMISSIONER: What is your opinion today? Did your opinion change in any way from what is set out in this report?

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THE WITNESS: No, my opinion is pretty much the same. The matter of the Estrella case is muddled, that is one difference now from before, and the Pacsai case where the level was 24 I think is made more difficult to interpret because of the



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Murphy case where values equal or higher to that were found and were ascribed by a group of experts to be not due to digoxin toxicity.

I am not an expert on digoxin toxicity. I have obviously read about it and have been involved in it now for these last two and one half years but there are aspects of the pharmacology of the drug that I am not an expert on. But from what knowledge I have I really could not say, I think, much more than that.

Q. Other than those two cases then, Doctor, I take it the opinion which you have expressed in this report has remained essentially unchanged with respect to the other cases?

A. That is correct.

Q. Doctor, may we turn then very briefly to two other matters with respect to two of these children. The first relates to John Onofre. We have heard, Doctor, that a number of the deaths with which the Commission is concerned were reported to the Coroner's offices at or near the time of the patient's death and it has been suggested in evidence, Doctor, that you reported the case of John Onofre to the coroner, and I would ask you first whether you did so?



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A. Yes, I did.

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Q. Can you help me as to why you reported the case to the coroner in the circumstances which applied when you did?

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A. This baby died on December 9, 1980 and was not reported to the coroner until six months later, actually on June 30, 1981.

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What happened in this case is that at the time that the gross pathology was done there was no suspicion at all about this case, and the pathology findings were quite significant. There was severe congenital heart disease. There was this matter of an arrhythmia. There was sepsis, or suspected sepsis, and in fact we cultured at autopsy organisms from three or four different sites. There was the matter in this baby during life of a severe diarrheal episode right up until within two days of death, with bloody diarrhea, which was attributed to, in the end - it was thought at first to be a necrotizing enterocolitis but turned out to be an viral-induced enterocolitis and we found some evidence at post mortem microscopically of vena colitis. In addition to that we found myocardium necrosis. So if you look at this case there were several ample causes of death in this baby on the



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basis of the pathology findings, but this case, most of this final path report was made in December before the pathology residents changed their rotation, which happens at the end of December, so Dr. Hega who assisted in fact did this case as pathology resident under my supervision, he left the rotation at the end of December and we had in fact completed the report, aside from the brain slides which had not come back yet. Everything else I think was back, and we had more or less completed the case and had sent it for typing.

It got shelved somehow in the typing and did not get typed until much later and by that time the events of March 1981 of course were very well known. When I actually prepared this case to send the final autopsy report I realized it was the death of a baby on 4A/B, on that ward, and it died at 4 o'clock in the morning where it had already been pointed out that many of the other babies had died at that time, or got into difficulty at that time, so I pulled the chart again on this case, which is not something we always do, but because of the events that had taken place, scrutinized the chart again and thought that if the Estrella case was suspicious, which was a case in



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January 1981, this case was from the month before that, that in view of that there may be some reasons or grounds for also considering this case. So, if you like, in an abundance of caution I called Dr. Tepperman.

Q. And reported it in June?

A. And reported it in June, which was sort of the first time I realized that there could possibly be a similar case or a case that should be looked at.

Q. Doctor, in the final autopsy report which was prepared in respect of John Onofre, which is found, Mr. Commissioner, in the child's medical record, Exhibit 70, I am not sure that you will need it directly, Doctor, but perhaps I can just read the pertinent language to you, the last paragraph with the final autopsy report in part reads as follows:

"Death in this case was somewhat sudden and unexpected being manifested by sudden onset of bradycardia and cardiac arrest. In view of the subsequent cases on this ward of digoxin overdose this must now be raised as a possibility



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"but there is no confirmation of this
since at the time of the gross
autopsy it was not considered."

Then you go on to indicate that
because of this possibility, in retrospect, Dr.
Tepperman had been notified and you carry on in the
final autopsy report to discuss the pathological
findings which support a cause of death attributable
to matters other than digoxin overdose.

My question to you, Doctor, is simply
that at the time you came to review this case again
when the final autopsy report had been typed and was
being prepared was the episode of bradycardia and
the timing of its onset and the timing of the child's
cardiac arrest factors which you as well took into
account in reaching your decision to report the case
to the coroner?

A. Yes, that was a factor. In fact,
these words "somewhat sudden and unexpected" the word
"somewhat" is a term that I do not ordinarily use. It
is not a medical word or a scientific word and I don't
usually use that word. In fact I usually tell my
residents not to use words like that.



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But I used it in this case I think perhaps to draw attention to the case. I think there is no question that the death was sudden and in the final note in the chart, which was written by, I think, Dr. Lichtman, who I think was a resident in cardiology at the time, he made a comment that the cause of the arrest or the etiology of the death, the arrest wasn't clear to him. So, I use that expression because of that.

Q. All right.

A. And to draw attention to the case specifically.

Q. Doctor, finally, we have heard evidence, a great deal of evidence with respect to the death of Kristin Inwood. We have heard evidence from Dr. Cutz concerning his involvement with this case at the time of the signout and the final autopsy report. It is my understanding, as you have told us earlier, that you were absent from the country for the period March 20 through to March 30, 1981 and that in your absence Dr. Cutz was requested to complete the final autopsy report on Kristin Inwood and did so.

A. Yes.

Q. But I take it that you were



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2 involved in the actual conduct of the autopsy in
3 this child?

4 A. Yes.

5 Q. Did you supervise that autopsy
6 or did you conduct it yourself?

7 A. I supervised it.

8 Q. Am I correct, Doctor, in my
9 understanding that Dr. Taylor in fact was the then
10 pathology resident who was responsible for the actual
11 conduct of the autopsy?

12 A. Yes.

13 Q. Were you present when Dr.
14 Taylor conducted that autopsy?

15 A. Yes.

16 Q. As Dr. Taylor was the individual
17 responsible for the performance of the autopsy
18 itself, if any specimens were taken, be it for
19 blood culture purposes or for the purposes of hema-
20 tology or virology testing, would he then have
21 been the pathologist who drew the required specimens
22 for sending to the appropriate lab in the hospital?

23 A. Yes.

24 Q. And we have heard evidence,
25 Doctor, that a blood specimen was drawn in this
case, or specimens were drawn in this case to be



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forwarded to virology for testing. Were you present when Dr. Taylor drew those samples?

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A. I don't remember that specifically, whether I was or not. I don't remember it, but I could have been there.

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Q. Do you have any information or knowledge, Doctor, that can help us as to the manner in which those blood specimens were drawn and the site from which they were drawn at autopsy?

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A. Well, usually when samples are taken for cultures they are done under as sterile conditions as possible. This means usually that the area is singed with a hot instrument first and then a sample with a sterile knife or syringe is taken from that area that has been sterilized.

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Q. Do you know whether or not that was done in this case?

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A. I don't know that specifically, but I would assume it was.

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Q. Do you know from which site the blood sample was drawn?

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A. Well, I'm not sure, I think there was more than one sample in this case and I am not sure which specific sample.

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Q. I'm sorry, to help you with



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2 that, Doctor, with Mr. Roland's assistance last
3 week, we heard evidence that there was a blood, I
4 believe a blood and a serum -- I'm sorry, two blood
5 specimens drawn, one of which went to virology and
6 ultimately was sent to the Centre of Forensic
7 Sciences in a serum form at that time.

8 But in respect of either of those blood specimens,
9 do you have any information available to you as to
10 the site from which they were obtained?

11 A. The answer to that specific
12 question is no.

13 Q. All right. Well, perhaps we
14 will have to obtain that from others, then, Doctor.
15 Thank you for your patience, Doctor. Those are
16 all my questions, Mr. Commissioner.

17 THE COMMISSIONER: Yes, all right.

18 Mr. Roland?

19 EXAMINATION BY MR. ROLAND:

20 Q. Dr. Phillips, you were asked
21 about your knowledge of the clinical condition of
22 the 37 patients that are set out in Exhibit 232
23 and particularly Ms. Cronk asked you about your
24 knowledge of any symptoms of digoxin toxicity
25 exhibited by those patients prior to their deaths
and you indicated to her, as I recall your evidence,



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2 that you weren't aware of any symptoms of
3 digoxin toxicity with respect to those particular
4 patients.

5 We have heard in evidence from Dr.
6 Rowe and others that the symptoms of digoxin
7 toxicity are generally non-specific in the sense
8 that they are the symptoms exhibited by infants as
9 a result of a number of other illnesses or maladies
10 and they include such things as vomiting, bradycardia,
11 the sudden onset of deteriorating signs, arrhythmia,
12 shallow respirations, ventricular fibrillations
13 and seizure. Those are the various symptoms that
14 have been indicated by Dr. Rowe and others.

15 I ask you first, did you review the
16 charts of these 37 babies to determine if any of
17 those symptoms were found in the charts of any of
18 the babies?

19 A. No, I didn't review personally
20 the charts with respect to those types of clinical
21 findings.

22 Q. Yes. Did you speak to any-
23 body, Dr. Rowe or any of the clinicians to determine
24 whether or not any of those clinical findings were
25 or were not present with respect to any of those
babies?



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2 A. Not those things
3 specifically. In fact, I would be very surprised
4 if some of them wouldn't be present, and this is
5 bradycardia, since most babies die with bradycardia,
6 for instance.

7 But what I did was, after reporting
8 a good number of these cases and I knew that
9 Dr. Rowe had reviewed them, I asked him if there was
10 evidence of digoxin toxicity clinically from his
11 purview.

12 Q. Yes.

13 A. That is really what I was
14 referring to. I can say also that I asked Dr.
15 Tepperman on occasion whether he had any concerns
16 about these high values in terms of digoxin toxicity
17 and of course he doesn't report to me and doesn't
18 have to answer questions that I ask like that, but I
19 wanted to know and was interested in knowing and
20 periodically would ask him and he told me that, at
21 least my understanding was that he was satisfied
22 with those cases. So, I didn't look personally.

23 Q. I take it then in summary what
24 you can tell us is that you don't know whether any
25 of these children exhibited some or all of these
various symptoms of digoxin toxicity, as nonspecific



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2 as they are, and you assumed that some or other of
3 them would have exhibited some or other of the
4 symptoms; not because of digoxin but because of
5 their clinical conditions.

6 A. Yes, I think that is correct.

7 Q. All right. Now, we have heard
8 evidence about the comparison between ante mortem
9 readings for digoxin and post mortem findings in
10 samples taken at autopsy. We heard, for instance,
11 last week from Dr. Spielberg that as a general matter
12 we can take it that the post mortem readings for
13 digoxin may be two to three times higher than the
14 ante mortem readings and I am looking at your
15 exhibit No. 232 and I see there in looking at the
16 various children and comparing the ante mortem
17 readings to the post mortem readings that we appear
18 to have a range between six times at the upper limit
19 and virtually the same reading, I think it is 21 --
20 is it 21?

21 THE COMMISSIONER: 21?

22 MR. ROLAND: No, it is not 21. I think
23 there is at least a couple that I noticed, or at
24 least one that seems to be about the same so that
25 the range is even higher, I see, from your studies
and what Dr. Spielberg told us. For instance, on No.



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2 10 I see the range is about 6 times, comparing the
3 ante mortem and the post mortem and that on many of
4 them there seems to be a three or four-fold increase
5 where we have ante mortem samples. Do you understand
6 this to be generally consistent with what other researchers
7 have found in doing these comparisons?

8 A. Yes, I think it is generally
9 agreed now that post mortem digoxin values are
10 higher than ante mortem digoxin values by a
11 factor of at least two or three.

12 THE COMMISSIONER: Well, did you do
13 anything -- could I have that first one this
14 morning, 230, please -- did you do the same sort
15 of exercise with respect to the digoxin levels in
16 the children whose readings were under 5 as you
17 did with those who were over 5?

18 THE WITNESS: No, I haven't done
19 that.

20 THE COMMISSIONER: Well, you could
21 be our authority on the question, then, if you did.
22 But I am not asking you to do it, but you don't
23 have to read any books, you just have to look at
24 your own figures. It seems to be the case in all
25 of these. I would be interested to know that if it
were the case in those who were under 5 as well.



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2 THE WITNESS: I would be quite
3 prepared to do that.

4 THE COMMISSIONER: Well, I hesitate
5 to have you do that. Well, you say that the studies
6 that you have read do generally indicate that there
7 is a margin.

8 THE WITNESS: Yes, every report that
9 mentions it mentions that it is higher. Where the
10 problem comes is how high is high and when we started
11 doing these studies I thought 2 was high and then 3
12 and then 4 and then 5 and then you get up to 12.8
13 and I think the latest now is even higher than
14 that. 15, I think, is the highest.

15 MR. ROLAND: Q. Doctor, in looking
16 at the results you obtained from the various
17 gutter fluid samples, I note when we compare these
18 to the post mortem blood samples you generally get
19 an increase value for blood, gutter blood in that
20 comparison, or gutter fluid. For instance, if we
21 look at number 17 there seems to be a six to seven-
22 fold increase and if we look at number 21 there
23 seems to be a two-fold increase, or about that.

24 THE COMMISSIONER: What are we
25 looking at now?

MR. ROLAND: I am first looking at



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number 17 when you compare ---

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THE COMMISSIONER: On 232?

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MR. ROLAND: -- on 232 when you compare
gutter blood or gutter fluid.

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THE COMMISSIONER: I don't seem to have
any reading for ante mortem.

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MR. ROLAND: No, I am comparing the
post mortem blood to the gutter fluid.

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THE COMMISSIONER: Oh, I see, yes,
all right.

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MR. ROLAND: And in the post mortem
blood to the gutter fluid you seem to have a
six to seven-fold increase. That increase is smaller
with respect to 21, it seems to be two-fold. With
respect to 23, which is of course a very high
reading, it is either -- well, the highest comparison
or the greatest discrepancy is 40-fold and the
smallest discrepancy when we compare the heart
blood to the second gutter fluid sample is about
two-fold, or a little less.

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Then I notice on 24 it is actually
less, at least, the one gutter fluid sample is less
than the heart fluid.

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Have you been able to draw any con-
clusions from your other studies, from all of the



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gutter fluid studies in comparing the gutter
fluid to the post mortem blood samples or serum
samples? It appears generally that the gutter
fluid is higher.

A. I think the generally higher
is correct, yes.



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Q. And the range seems to be quite extraordinary, I mean it is high in the one case which is 40, and in others it is as high as 6 or 7 fold difference; for instance, No. 17 seems to show that.

A. Yes, there is a considerable range.

Q. And even setting aside the 169 value, even if you have a 6 or 7 fold range between autopsy dig. results from blood and from gutter fluid, I take it that would put some doubt as well into the Estrella reading which was 72, but we know if you divide that by 6 or 7 we are down to what you tell us Dr. Tepperman says is a range, a postmortem range for blood, or serum that is not particularly troublesome, that is under 12, is that fair?

A. If you divide it by 6 you say?

Q. If you divide by 6, if you divide the Estrella 72 reading by 6 or 7.

THE COMMISSIONER: 6 is easier.

MR. ROLAND: Q. Yes, 6 is easier.

A. Yes.

Q. You get 12. And 12 is I take it the range which Dr. Tepperman says to you



EE2

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today in a postmortem blood result, don't trouble
yourself much by that, it is when you are over 12
we are going to get concerned.

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A. I wouldn't say don't trouble
yourself because you would have to look at the
circumstances, you know, when the last dig. was
given, whether there was renal failure and all these
other things.

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THE COMMISSIONER: If you divide it
by 40 you have a therapeutic range.

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11

MR. ROLAND: Yes, that is right.
Thank you very much, Dr. Phillips.

12

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THE COMMISSIONER: I think we will
take 15 minutes.

14

---Short recess.

15

---Upon resuming.

16

THE COMMISSIONER: Yes, Mr. Olah?

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MR. OLAH: Mr. Commissioner, I am
just wondering whether we are any closer to the
target date for argument. I know possibly this
coming Thursday --

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THE COMMISSIONER: Well, I suggested
the possibility of doing it next Thursday.

22

There is always the possibility that we could do it -
you see, the only time the - the Municipal Board,

23

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EE3 1
2 : and I have to look up these dates all the time,
3 but some time around - the Municipal Board needs
4 this place for the 16th, 17th and 18th of November,
5 and the 18th does not worry us at all because we
6 don't sit on that day. I am informed that in order
7 to get the Court Room we probably have to get it on
8 the 14th because some of those colleagues of mine
9 get a little testy if they start in on the 14th and
10 then somebody tries to evict them on the 16th, so
we should get in on the 14th to do it.

11 Now the suggestions were the
12 possibility of the afternoon of the 10th, and the
13 movers would proceed to take things over and we
14 would either have argument then. There is also the
15 possibility that we could have the argument on
16 either the 14th or the 15th and it would be in the
17 afternoon. At any rate the initial request was for
18 the afternoon of the 10th and I asked Mr. Brown and
19 Mr. Young who were interested in it, and anybody
20 else, to consider the problem and we would discuss
it tomorrow morning at 10 o'clock.

21 MR. OLAH: I am grateful, I would
22 just like to know with some degree of certitude
23 whether we are going this Thursday or not.

24 THE COMMISSIONER: This Thursday?
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MR. OLAH: Yes, I just wanted to
be sure I was prepared.

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THE COMMISSIONER: I hadn't heard,
is there the possibility, this Thursday is the 3rd
of November, isn't that right?

6

7

MR. BROWN: I had spoken with
Mr. Young this morning and at least that is a
possibility but it is too tentative really to
put before you now.

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THE COMMISSIONER: I think we would
try and settle it tomorrow morning at 10 o'clock.

11

12

MR. OLAH: Thank you, sir.

13

14

THE COMMISSIONER: And see what
information we have. I think you had better have
alternative dates and see what you can do, and
everybody else had better have alternative dates
and see what we can do, all right. Yes.

15

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17

MR. ROLAND: I have just one other
question for Dr. Phillips.

18

19

THE COMMISSIONER: Oh, all right.

20

MR. ROLAND: Before I turn the mike
over to my friends.

21

22

Q. That has to do with the Estrella
protocol. You told us, Dr. Phillips, that the
Estrella protocol was not entirely, or precisely

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the same as what had occurred with Baby Estrella.

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I gather the difference was with respect to those

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babies that were the subject matter of the protocol

5

study, they were not sewn up and taken down to the

6

morgue; rather the gutter fluid sample was taken at

7

the post mortem at the end of the postmortem

8

examination and then the baby was sewn up and

9

transported to the morgue and that was one of the

10

differences, am I correct in that?

A. Yes, you are correct in that.

11

The protocol we drew up we tried to make it reason-

12

ably practical and yet still subserving what we

13

thought was the main problem was the difference

14

between a blood sample and a body fluid sample. We

15

knew that there was slight modification in the

16

procedure at the time we set out that protocol, but

17

we thought that it was reasonably close and practical.

18

Q. Were there any other differences

19

between the protocol and what had occurred in respect

to Baby Estrella?

20

A. No, there probably were minor,

21

for instance, in Estrella there were two samples

22

taken three hours apart, things like that.

23

Q. Yes. Was the first gutter

24

blood sample taken at the beginning of the autopsy?

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EE5



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A. In protocol?

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Q. Yes.

4

A. Yes.

5

Q. I understood it was taken at

6

the end, but it was taken at the beginning.

7

A. Well, there are certain

8

procedures you have to go through before you get

9

into a situation where there is any fluid of this

10

sort, so it was taken at that time, I can go into

11

all the details if you want.

MR. ROLAND: No. Thank you.

12

THE COMMISSIONER: Miss Chown, is

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this your client?

14

MS. CHOWN: Yes.

15

EXAMINATION BY MS. CHOWN:

16

Q. Dr. Phillips, I would like to

17

take you first to have another look at Exhibit 240,

18

and that is the autopsies related to heart deaths

19

for the period 1975 to 1983.

20

Am I correct in my understanding

21

that this document was something that was prepared

some time after March of 1981?

22

A. Yes. I think what we could

23

do and what we should do, one of the things I thought

24

we should do is do a retrospective analysis not just

25



1
2 for those cases, but all the cases going back a
3 good number of years just to see what the experience
4 has been. So this was - we did a retrospective
5 study from pathology data of the cardiac deaths at
6 the Hospital back to 1975.

7 Q. Is it fair to say then in the
8 period starting in 1975, did you in fact keep
9 statistics on a ward basis as set out in Exhibit 240?

10 A. No, this is not generally
11 available, we create this protocol to draw it up
12 like that.

13 Q. Would the numbers that you
14 would have had available to you in fact be the
15 numbers in the top right hand column on Exhibit 240,
16 that is simply a monthly total of the number of
17 autopsies?

18 A. Well, we were not actually
19 keeping numerical values like that at all, but that
20 would more closely reflect what our sort of day to
21 day impression would be, it would be that column,
22 because we don't generally pay much attention to
23 where specifically in the Hospital the patients are
24 from except babies who have heart disease will be
25 expected to come mostly from one of three areas,
but not all of them. Generally we would be sort of



1
2 generally aware of that but not specifically, this
3 is not something that is critically examined.

4 Q. You didn't really pay too much
5 attention to it?

6 A. No, it is not normal practice
7 to do that.

8 Q. And in your experience which
9 we have seen from your curriculum vitae has extended
10 to several other hospitals, in your experience is
11 it common for Pathology Departments to keep statistics
12 in the manner set out in Exhibit 240, that is by
ward and by month?

13 A. No, there is no Pathology
14 Department that I know of in this city, or in this
15 country that does that. I think probably, certainly
16 anywhere I trained, or anybody that I know who has
17 trained in the United States in any place keeps this
kind of statistics.

18 Q. So this was a document that
19 was created as part of the Pathology Department's
20 examination then of what had taken place in the
21 preceding months, and indeed with this exhibit in
22 the preceding years. You have told us in your
23 evidence that the yearly figures in and of themselves
24 did not vary significantly over this period, is that
25



1
2 correct?

3 A. Well, it is an up and down
4 curve one sort of gets with higher one year and less
5 the next and high again and this sort of trend.

6 Q. You have also told us that
7 in and of themselves these figures are not totally
8 reliable indicators of what is happening with respect
9 to deaths in the Hospital, and one factor you have
10 mentioned is that of autopsy consents. Would you
11 be able to give us a figure as to what percentage
12 of cardiac deaths consent for autopsies are given?

13 A. Yes. In that - overall it is
14 around 70 per cent, but for individual months it
15 would vary from less than 50 per cent down to
16 probably, I don't know if it ever went to zero, but
17 it could be much less than 50 per cent, all the way
18 to some months where it would be 100 per cent,
19 the overall average is somewhere around 70.

20 Q. So the figures in Exhibit 240
21 then tell us simply about deaths, cases in which you
22 performed an autopsy, they do not tell us straight
23 figures of number of deaths?

24 A. That is correct.

25 Q. I understand you have brought
with you this afternoon two graphs, and I apologize,



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3 Mr. Commissioner, we do not have copies of these
4 graphs, but perhaps I can ask the Doctor to put them
5 in as exhibits and we can make copies available.

6 Doctor, do you have those two graphs
7 with you?

8 A. Are you referring to this?

9 Q. Yes, I am. My understanding
10 is the first graph is in effect a transference of
11 information that is on Exhibit 240 into a graph
12 form, is that by and large correct?

13 A. Well, the submission that was
14 made this morning by Miss Cronk was data I prepared
15 myself either 1981 or 1982, I don't remember exactly,
16 it took some while to prepare that, but after that
17 I had one of my colleagues also do it independently
18 of mine and he - what I took was the main pathology
19 diagnosis; what he did he actually reviewed all of
20 the cases, so his figures are slightly different
21 from mine, and I would underscore slightly; for
22 instance if I have 84 he may have 83, something like
23 that. But for all intents and purposes the numbers
24 are the same and using that much more refined data
25 base for which I have all the figures here, we did
do a computer graphic, if you like, of the overall
figures going back to 1975.



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Q. So I understand what you are saying the information you presented to Miss Cronk this morning and is contained in Exhibit 240, the graph that you are about to talk to us about contains basically that same information with some slight difference?

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A. That is correct.

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Q. And am I correct in understanding that those differences are related to a slightly more sophisticated method of examining the cases that were to be included in autopsies related to heart death?



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A. Yes, the sort of thing is that I included some cases that had been sent in from outside and he did not include those. I included some patients that had patent ductus which he thought was not a severe enough heart disease to include, so he left it out. So there were some minor differences, but essentially it is the same data.

Q. And the data on Exhibit 240 goes up to the end of 1982. It is my understanding that now the pathology department continues to maintain this kind of data up to the present time.

Is that correct?

A. Yes, we are continuing to do this on an ongoing basis.

Q. Does the graph that you have bring these figures up to the present time?

A. It goes up to July of 1983.

Q. Looking at the first graph which is entitled "Cardiac Autopsies Per Month" and it starts in 1975, as you have indicated, the same period that Exhibit 240 covers and it goes up until -- I'm sorry, what months did you say?

A. July.

Q. July of 1983, and the graph is



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simply done in two colors to contrast the various years and in addition to the figures there are some red lines, horizontal red lines on the graph. Can you explain to me what those are?

A. The short red lines of the graph are the average for the year and the long red line is the average for the entire period.

Q. Would I be correct in reading the long red line, which you have told me is the average for the whole period, at being approximately six deaths?

A. Yes, about that.

Q. Six deaths per month would be the average.

A. Right.

Q. And then the shorter lines being the average per year, some fall below that number and some fall above it.

A. Yes.

Q. Doctor, from an examination of this material which is in effect, as we have described, a graph representation of Exhibit 240, are there any conclusions that you can draw from looking at it?

A. Well, there are peaks and



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valleys and I would find it difficult if you covered up
the bottom part --

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Q. By the bottom part you are
indicating the years.

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A. -- the years, to be able to
pick out the time that we are talking about.

7

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Q. In other words, the epidemic
period in and of itself does not stand out markedly
on this graph?

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A. I think with prior information
you can pick it out but I think without prior
information it would be very difficult to pick that
out of that.

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14

Q. Would it be fair to say that
on this particular graph there is a similar level
of about 12 deaths per month to be seen in the
latter part of 1982?

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A. Yes.

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MS. CHOWN: Mr. Commissioner, if that
might be the next exhibit --

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THE COMMISSIONER: Exhibit 241.

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---EXHIBIT NO. 241: Graph entitled, "Cardiac
Analyses Per Month."

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Q. You also brought another graph as well today and that graph is entitled, "Cardiac Autopsies per Thousand Patient Days."

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Am I correct in distinguishing between these two graphs by saying that this second graph is an expression of the autopsies by means of a rate?

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A. Yes. The first graph just shows pathology data; the second one takes into account the number of patients in the hospital during those periods, in other words, the number of patient days, and so it is a formula actually recommended by the CDC that should be used for evaluating rates of deaths in hospitals as being more accurate.

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Q. Is it your understanding that they would feel that this method of examining the question of cardiac autopsy by means of a rate rather than hard numbers would be a more valuable and accurate expression of the figure?

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A. In fact, I did this to see what it would look like and in fact it is recommended that this actually not be done because it does give an abnormal look at the figures. There is a gross area in this in that these are just autopsies and what is needed for this to really



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be significant is the total deaths in the hospital.

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But the closest that we could get, using our data,

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would be to use the same formula that is recommended

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for that and apply it to the pathology data, and

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that is what I did here, to see if these peaks

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would disappear if one took into account the

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patient's census and, in fact, they don't disappear.

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Q. And this graph as well contains
a number of red horizontal lines, and one long hori-

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zontal line extending from 1975 to 1983. Is that

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the line representing the average overall?

12

A. Yes.

13

Q. And there are in addition a number
of shorter red lines for each year. And do those

14

represent the year average?

15

A. Yes. I should say, too, that I
did not actually do this. Dr. Smith in my department
who has considerable interest in computers and
statistics prepared these for me.

16

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Q. I think you indicated you were
interested to see whether this particular method
of analyzing the figures would cause the peaks and
valleys to disappear and in fact your view of the
figures on this method of analysis is what?

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A. I think the peaks look even

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Phillips, cr.ex.
(Chown)

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higher to me on these. The reason I did this is that in the 1982 block of time there are two high peaks and I drew attention to these after the events of 1981 and in fact called two meetings involving quite a number of medical staff and people outside of the hospital to discuss these cases. It was at that time that I was made aware that one should look at these values and take into account the patient census. This is why I subsequently prepared this, and the last word on this is what I stated previously a few minutes ago, that the data has in fact very limited value because it does not take into account the autopsy consent rate plus the fact that we find, with autopsy, heart disease from time to time that was not suspected clinically, and factors like that --

Q. Would effect the accuracy of the figures?

A. -- effect the overall purview in the hospital, at least of cardiac deaths.

So you have some factors that would increase it and some that would decrease it.

MS. CHOWN: Might that be the next exhibit, sir.

THE COMMISSIONER: Exhibit 242.



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---EXHIBIT NO. 242: Graph entitled "Cardiac
Autopsies Per Thousand Patient
Days"

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Q. Again, Dr. Phillips, those
graphs obviously being made after the fact, you did
not have that kind of information nor did you under-
take that kind of analysis during the period in
question.

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A. No, that is correct.

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Q. I would like to touch briefly
on the case of John Onofre that Ms. Cronk referred
to at the end of your direct examination. Would it
be fair to refer to that case as an excellent
example of the use of hindsight?

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14

A. Yes.

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Q. You told us, I believe, that
the pathology residents change their rotation at
the end of December and that you and Dr. Higa had
completed the preliminary report on this child
some time shortly after the autopsy was done in the
Centre. Is that correct?

20

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A. Yes.

Q. For some reason that you cannot
particularly account for now, the report was sent
to the typing pool to be compiled in its final form
and somehow went astray?



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A. Yes.

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Q. And when you saw it again,

4

which would be some time after the period in

5

question, some time after March of 1981, it was

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only at that point that you had second thoughts,
if we can put it that way.

7

A. Yes. I should say that in

8

pathology we really had no awareness of increased

9

death rates on the ward and this case came to us

10

as a case of serious congenital heart disease with

11

heart failure and we found serious congenital heart

12

disease with heart failure plus additional findings

13

and so it was viewed by us at the time that

14

we did it, and in fact at the time we prepared

15

the report for typing as a routine case of serious,

16

complex congenital heart disease. It was only

17

afterwards, using hindsight and the circumstances

18

that came, that we thought this case should be

19

viewed and looked at, if it was not already being

20

looked at I had no knowledge one way or the

21

other, but I thought that we should draw attention

22

to it and that is why I called the coroner on that.

23

Q. But that had nothing to do

24

with any new information with respect to any of the

25

pathology in that case?



Phillips, cr. ex.
(Chown)

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A. No, the pathology was really

3

the same. There seemed to be enough pathology, in

4

fact more than enough pathology to explain why this

5

baby might have died.

6

Q. Would it be fair to say that

7

with all the cases that were later regarded as

8

suspicious at the time that these cases were coming

9

in on a month to month basis there was nothing

10

particularly in them to alert pathology to anything

suspicious?

11

A. No. There was no indication

12

in the pathology department that there was anything

13

suspicious at all.

14

Q. And that is with respect to

the findings in each case?

15

A. Yes. You don't get the same

16

perspective in pathology. I would have to underscore

17

that. It is not like working on the wards where

18

you are very familiar with the patients and what is

19

going on. We see heart deaths from all over the

20

hospital and, not being aware of any specific

21

happenings on any particular ward whatever, this

22

case was just interpreted in the way in which we

23

received it, that it was another serious congenital

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heart disease.

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Q. And with all these cases, you have indicated to us that after the events of March of 1981 you personally took time to review the microscopic slides of each case and found nothing unusual and you have also told us that you conducted a retrospective study of a group of similar cases from a previous year and that the result of that study was to find nothing unusual that would indicate you had missed something with this particular group of cases.

A. Yes, that is correct.

In fact, I think certainly pathologically you could take these groups and mix them up and there would be no way that you could sort out which one was in which pile.

Q. Would it be fair to say that you certainly did not expect to find anything different in these cases but you were undergoing a very cautious approach of double checking your results and thoughts about the particular cases in question by undertaking the retrospective study?

A. I am not sure I understand the question.

Q. Let me try that again.

When you decided to study the sample



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of cases from 1979 of children who suffered from severe congenital heart defects, did you expect, before you embarked on that study, that they would in any way be different from the autopsy findings of the cases under suspicion?

A. I did not know, and this is partly why I did it. I looked to really see if there were any noticeable differences. The only noticeable difference actually that I found is that more of those patients died in the OR. Aside from that, certainly looking at the pathology of it, it was very, very similar: pneumonia, atelectasis, plural infusions, cardiac necrosis, cardiac deformities, these types of things.

Q. So in your view the groups were remarkably similar?

A. Yes.

MS. CHOWN: Thank you. Those are my questions.

THE COMMISSIONER: Mr. Brown.

MR. BROWN: No questions, Mr. Commissioner.

THE COMMISSIONER: Miss Forster?

CROSS-EXAMINATION BY MISS FORSTER:

Q. Doctor, I would like to deal



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first with Exhibit 230 which I take it is a summary
of your post mortem blood digoxin data. I take it
your study included only post mortems that were
conducted within the Hospital for Sick Children.

A. Yes.

Q. And all the samples were taken
within the hospital?

A. Yes.



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Q. And all of the levels

3

were tested within the Hospital?

4

A. Yes. Some of them have

5

been double-checked by the Centre of Forensic

6

Sciences, a number of them, but the vast majority
were done in the Hospital, that is correct.

7

Q. All right. Are the ones

8

that have been double-checked by the Centre of

9

Forensic Sciences those we find on Exhibit 232, which

10

was your summary of 34 deaths with a level greater

11

than 5, or are there ones in addition to that?

12

A. Some of them are on that

13

list, yes.

14

Q. Were samples in the group

15

of less than 1 nanogram and the group of 1 to 4.9

16

nanograms also double-checked by the Centre of
Forensic Sciences?

17

A. There were a number in

18

those groups. The problem was that frequently

19

there was not enough sample left to test it but in

20

those cases, for instance, where digoxin value was

21

found and the patient was not on digoxin, in each of

22

those instances I went and enquired if there was
any sample left so that we could get it double-checked.

23

Q. And in that group of 12

24

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GG2

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were any double-checked, do you recall?

3

A. Yes, there was one.

4

Q. Did the result at the

5

Centre of Forensic Sciences differ substantially
from the result that you obtained?

6

A. They reported back to me
that there was no digoxin present in that sample.

8

Q. Okay.

9

A. I don't remember the exact

10

wording but that's essentially the results.

11

Q. All right. And I take it,

12

sir, that -- oh, first of all, going back to Exhibit
230 for a moment, you mention in one of your notes

13

that dealing with these 12 cases where digoxin was

14

found in children for whom it was not prescribed that

15

all the patients were desperately ill, recent

16

transfers to the Hospital. Did you attach any

17

significance to their clinical condition?

18

A. Well, it is hard to

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answer that. I was impressed looking at these that

20

they were all very, very seriously ill. I wondered

21

whether or not actually some of them would have been

22

given digoxin on the outside, I suspected they probably

23

had, but I couldn't find anywhere that that actually

24

had been done.

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Q. Did you attempt to investigate whether they had been given digoxin?

A. Well, what I did was in those cases I had been instructed to report all these cases to the Coroner. So, I did that. It is not our normal practice to double-check what the Coroner does with it, you know. We usually, having reported to them, leave it in their hands, that is our normal practice.

Q. Are you aware of any -- do you have any information that any of these 12 did in fact receive digoxin, or is that merely a suspicion?

A. I only really know, I think it is about the first five that I know were -- well, I know from Dr. Bennett telling me that he had, either himself or had somebody check the hospitals from where the referrals came in those cases, and that there was no digoxin given, to the best of their records.

Q. Do you have any information that the other seven children received digoxin?

A. I don't know about those. According to our records, hospital records and the records that come with the transfer of the baby there



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GG4 2 is no indication that digoxin was given.

3 Q. All right. Now going back
4 to my initial question, Doctor, do you attach any
5 significance to the clinical condition of these
6 children in that you mentioned they were desperately
7 ill?

8 A. Well, I wondered honestly
9 if many of these patients being so desperately ill
10 would most likely have received many drugs and I
11 was wondering if there was cross-reaction between
12 drugs that might have changed...

13 Q. Did you follow that up?

14 A. Well, I asked the bio-
15 chemists on a number of occasions if a patient is on
16 multiple drugs how this would affect an assay for
17 instance for digoxin.

18 Q. Yes.

19 A. And they have repeatedly
20 told me that it wouldn't affect it.

21 Q. Did you attach any other
22 significance to the clinical condition?

23 A. I don't think so.

24 Q. All right. And these
25 twelve children are summarized, Doctor, on Exhibit 231?

A. Yes, I have it.



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Q. Miss Cronk this morning

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suggested to you, and I believe she is correct that

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most of the children on this list were neonates.

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I notice, however, Doctor, that one of the children,

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the fourth one down, appears to have been five years

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old at the time of his death, is that correct?

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THE COMMISSIONER: Very close.

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A. Yes. The 1977 figure is

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actually correct, which I presume it is, but without

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actually checking that report to confirm that, that's

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right.

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MS. FORSTER: Q. Did you or your

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colleagues make any attempt to explain these figures

in these twelve children or were you simply on a

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data-gathering study?

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A. Well, I explained it to you

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already that I referred these to the clinicians

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responsible in the Hospital for care of these

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patients and I reported them to the Coroner and I

think that fulfills my responsibility.

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Q. That's what I'm getting at.

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Did you see your responsibility as gathering the

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data and forwarding it on to other people or did you

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yourself attempt to reach conclusions as a result of

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the data you gathered?

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A. I did to some extent in that I asked them to -- I asked about drug levels with multiple drugs. You know, I made enquiries like that. I looked at the charts. In fact, the way these were reported usually I had the autopsy findings and the charts in front of me when I reported them and read out extensively from these charts about them to the people. There was obviously a lot of concern about this as to what it meant.

It was also at about that time, however, where it was becoming apparent that post mortem digoxin levels in patients who were on digoxin are seemingly not as reliable, if you like, or at least always tended to be higher than the ante mortem values.

Q. Yes.

A. So, the actual significance of the figures was also discussed as to what that meant. So, it wouldn't be correct to say that I just collected the data and didn't do anything, I think I did a lot of things about it. I couldn't explain it, however.

Q. That was what I was getting at. Did you ever prepare a formal report summarizing



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your conclusions or was your role to go to the
necessary people such as the biochemists that you
have mentioned and discuss your findings with them
and get some feedback from them?

A. Well, I don't know what
more one could do having exhausted, trying to find
any cause for it and failing and reporting it to
the appropriate people and asking them what they
thought of it and they also had no solution for it.
Other than keeping them updated on other cases of
the same type, I don't know what else I could have
done as a matter of fact.



BmB.jc
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Q. Okay. Dealing with your report which is Exhibit 239, you mention in the summary that there were the two cases without obvious anatomic findings, that of Pacsai and that of Hines?

A. Yes.

Q. With respect to the Pacsai case, Doctor, are you familiar with the report prepared by Dr. Bain regarding the deaths at The Hospital for Sick Children?

A. Well, I have seen the Bain Report. It is not something that I have at my fingertips but I have at some time read it in the past.

Q. Doctor, with respect to the Pacsai baby Dr. Bain suggests that the child could have suffered from transient adrenal insufficiency. My question for you, sir, is if that was the cause of death, and I'm asking you to just assume it was the cause of death for a moment, would you agree with me that there wouldn't be any obvious anatomic findings because the condition is as the name suggests a transient one?

A. Well, this is a difficult question. Dr. Bain asked me in this case to check the slides on the adrenal glands for him to see if



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they were normal or not and I did that and they were normal.

Q. Yes.

A. And I briefly discussed it with him as to what that meant to him and he said, well, it could still mean that there was transient dysfunction of the gland even if there were no morphological abnormalities.

Q. Is that an opinion with which you agree?

A. This is really mainly a clinical matter. I don't think in my experience that I am familiar with the syndrome that he was describing.

Q. All right.

A. Dr. Bain is one of the outstanding paediatric clinicians who would have had experience perhaps with that.

Q. Finally, Doctor, dealing with Exhibit 240, which is the summary of the autopsies.

A. I'm sorry, which one was that?

Q. It was the one you prepared of the autopsies on cardiac deaths.

A. Yes.

Q. Doctor, as I read this summary in each year there seemed to have been more autopsies



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conducted from children who died with cardiac problems
on Wards 7F and 7G than on Wards 4A, 4B or 5A?

A. I'm sorry, just a minute, I have
so many papers.

MS. CRONK: Do you need a copy of
it, Doctor? Is it the exhibit that you're looking for?

THE WITNESS: Yes.

THE COMMISSIONER: It is an accurate
statement.

MS. FORSTER: Pardon me?

THE COMMISSIONER: It is an accurate
statement.

MS. FORSTER: Q. I'm simply suggesting,
Doctor, that there were more autopsies conducted from
babies who died with cardiac problems on 7F and 7G
than 4A and 4B?

A. Which period?

Q. In every period on that list
including 1980/81?

A. Yes.

Q. The one thing that I find a
little strange in this summary, Doctor, is in the
year 1981 there appear to have been no autopsies
conducted from patients with cardiac problems on 4A,
4B during 1981 after March.



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THE COMMISSIONER: None died.

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THE WITNESS: Yes.

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MS. FORSTER: Q. Does that strike you as odd in terms of the pattern that evolves throughout your study?

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A. Well, I think that's a very interesting observation. On the face of it it would look like all the deaths stopped on that ward after the events of the end of March.

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Q. Would you attribute this to part of the peak and valley effect that you were talking about with Miss Chown?

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A. I suppose this would be reflected in that particular one. But actually those peaks that we have charted on the handout actually probably were not ward specific, they were the totals. So, if you look at the totals, which is the column on the far right, it looks a little different. So, I don't know if you would see it or not. You would certainly see the high number in March.

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MS. FORSTER: Thank you, Doctor.

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THE COMMISSIONER: All right. Well, I guess tomorrow, Mr. Hunt.

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MS. CRONK: Just before we break for the day, Mr. Commissioner, there has been a change



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in plans for scheduling that counsel should be aware of and, that is, that Dr. Izukawa will be called next followed by Dr. Bain. In terms of when he will be called it would be helpful to have an estimate of time from other counsel.

THE COMMISSIONER: Mr. Hunt, do you want to start off?

MR. HUNT: Yes.

THE COMMISSIONER: No, no, how long would you think you will be?

MR. HUNT: Not very long, about five minutes, ten minutes.

THE COMMISSIONER: Mr. Young?

MR. YOUNG: If I have any questions I will be finished within five minutes.

THE COMMISSIONER: Miss McIntyre?

MS. MCINTYRE: Five to ten minutes at the most, Mr. Commissioner.

THE COMMISSIONER: Mr. Knazan?

MR. KNAZAN: Five to ten minutes.

THE COMMISSIONER: Mr. Olah?

MR. OLAH: Same time.

THE COMMISSIONER: Mr. Labow?

MR. LABOW: Ten to fifteen minutes.

THE COMMISSIONER: Well, two of our -



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three of our number - two are certainly not here but
it does look as though we will fill out the morning
tomorrow.

MS. CRONK: Thank you, sir, that is
helpful.

THE COMMISSIONER: All right.

--- Whereupon the hearing adjourned at 4:40 p.m.
until Tuesday, November 1st, 1983 at 10:00 a.m.

